WILDLIFE REVIEW

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The Department of the Interior, created in 1849, is our Nation's Department of Natural Resources, concerned with management, conservation, and development of water, wildlife, fish, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor.

NATURAL RESOURCES & CLIMATE

Trefethen, James B. CRUSADE FOR WILDLIFE / HIGHLIGHTS IN CONSERVATION PROGRESS. Stackpole Co., Harrisburg, Pa., and Boone and Crockett Club, N. Y. vii + 377 p., illus. 1961. $7.50. WR 106: 2

An exceptionally fine documentation of the development of conservation and conservation concept in the United States as well as a history of the significant part which the Boone and Crockett Club and its membership played in this development. Starting as an association of big-game hunters in 1887 under the leadership of Teddy Roosevelt, the Club influence was demonstrated early in the development of protection of the already established but endangered Yellowstone National Park. From early interests in protecting big-game and big-game habitat, the diverse interests of the small club membership led to the ultimate maturation of an ecological concept of management. The organization's history reflects the development of present philosophies in managements of forests, parks, refuges and other recreation areas. Through documented accounts of events and the people who participated, the book provides insight into the past and witnesses the inspired thinking, planning and action that has made possible our present national conservation health. National Parks such as Glacier and Mt. McKinley, increased but still vexatious big-game herds and our multiple use planning on public lands are shown as steps in achieving a conservation awareness in the United States. Providing, as it does, an insight into the past, it records landmarks of progress and provides encouragement for the future. Refreshingly, the author predicts continued opportunities for wildlife and hunting despite the need for further regulations so that an expanding population can utilize available wildlife in a manageable fashion. The importance of sound information as a basis for action is commended throughout the publication, but the importance of the sportsman in assuring a successful program is emphasized. This monumental but unostentatious documentation of development of a conservation concept is of interest to conservation administrators as well as sportsmen. As Breaking New Ground by Pinchot is a fundamental reference for foresters so this fine book is a basic reference for the wildlife field.--James S. Lindzey.

SOILS

Clocker, Lawrence F., and others. SOIL SURVEY OF KIMBALL COUNTY, NEBRASKA. SCS, Ser. 1957, no. 14. i + 74 p., 29 figs. + folded maps based on aerial photos and bound in. March 1962. Sold by Supt. Documents. WR 106: 2

Dietz, W. P., and others. SOIL SURVEY OF VAN BUREN COUNTY, IOWA. SCS, Ser. 1958, no. 16. i + 86 p., 11 figs. + folded maps based on aerial photos and bound in. Jan. 1962. Sold by Supt. Documents. WR 106: 2

Fleming, Edward L., and others. SOIL SURVEY OF STANTON COUNTY, KANSAS. SCS, Ser. 1958, no. 15. i + 41 p., 24 figs. + single-fold maps based on aerial photos and bound in. Dec. 1961. Sold by Supt. Documents. WR 106: 2
Includes brief section on wildlife management.

Gorman, John L., and others. SOIL SURVEY OF JACKSON AND MASON COUNTIES, WEST VIRGINIA. SCS, Ser. 1957, no. 11. i + 92 p., 9 figs. + single-fold maps based on aerial photos and bound in. Oct. 1961. Sold by Supt. Documents. WR 106: 2

Jacquot, Louis L., and others. SOIL SURVEY OF CARSON COUNTY, TEXAS. SCS, Ser. 1959, no. 10. i + 69 p., 26 figs. + folded maps based on aerial photos and bound in. July 1962. Sold by Supt. Documents. WR 106: 2
Includes brief section on wildlife.

Miller, William M., and others. SOIL SURVEY OF TERRY COUNTY, TEXAS. SCS, Ser. 1959, no. 6. i + 57 p., 19 figs. + single-fold maps based on aerial photos and bound in. Feb. 1962. Sold by Supt. Documents. WR 106: 2

SOILS--Continued

Montgomery, Dallas D., and others. SOIL SURVEY OF SCOTT COUNTY, INDIANA. SCS, Ser. 1958, no. 17. i + 69 p., 22 figs. + folded maps based on aerial photos and bound in. Mar. 1962. Sold by Supt. Documents. WR 106: 3
With section on wildlife management.

Newman, Allen L., and others. SOIL SURVEY OF LAMB COUNTY, TEXAS. SCS, Ser. 1959, no. 7. i + 69 p., 21 figs. + single-fold maps based on aerial photos and bound in. Mar. 1962. Sold by Supt. Documents. WR 106: 3

Rieger, Samuel, and others. SOIL SURVEY OF KENAI-KASILOF AREA, ALASKA. SCS, Ser. 1958, no. 20. i + 56 p., 10 figs. + single-fold maps based on aerial photos and bound in. June 1962. Sold by Supt. Documents. WR 106: 3

Scott, F. T., and others. SOIL SURVEY OF SHARKEY COUNTY, MISSISSIPPI. SCS, Ser. 1959, no. 3. i + 36 p., 5 figs. + single-fold maps based on aerial photos and bound in. Feb. 1962. Sold by Supt. Documents. WR 106: 3

Shearin, Arthur E., and others. SOIL SURVEY OF HARTFORD COUNTY, CONNECTICUT. SCS, Ser. 1958, no. 14. i + 126 p., 11 figs. + single-fold maps based on aerial photos and bound in. Feb. 1962. Sold by Supt. Documents. WR 106: 3

Slota, Robert W., and others. SOIL SURVEY OF CRAWFORD COUNTY, WISCONSIN. SCS, Ser. 1958, no. 18. i + 85 p., 26 figs. + folded maps based on aerial photos and bound in. Dec. 1961. Sold by Supt. Documents. WR 106: 3

Yost, Donald A., and others. SOIL SURVEY OF HALL COUNTY, NEBRASKA. SCS, Ser. 1957, no. 12. ii + 141 p., 30 figs. + folded maps based on aerial photos and bound in. Jan. 1962. Sold by Supt. Documents. WR 106: 3

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Neira Franco, Manuel. BIBLIOGRAFÍA Y TERMINOLOGÍA FORESTAL. [FORESTRY BIBLIOGRAPHY AND TERMINOLOGY.] Montes 17(100): 359-362. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962.] WR 106: 3
[In Spanish.] A discussion of some of the problems involved in compiling an international forestry bibliography, and especially the development of a multilingual forestry terminology. These projects are being studied by a mixed committee of FAO and IUFRO (International Union of Forestry Research Organizations).--W. N. Sparhawk.

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Bray, J. Roger. (Univ. Toronto, Toronto 5, Canada.) USE OF NON-AREA ANALYTIC DATA TO DETERMINE SPECIES DISPERSION. Ecology 43(2): 328-333. Spring 1962. WR 106: 3
A technique for assessing dispersion in plant populations by analyzing data from non-area analytic samples is proposed. Models for random and non-random dispersion are presented along with an analysis of dispersion in some natural plant populations and a discussion of some dispersion mechanisms in these populations. The dispersion method was applied to several forest surveys and to the "Maple Forest" and "Northern Hardwood Forest" maps of Wis. Some mechanisms which may underlie these dispersions are discussed including manner of dissemination and regeneration, stage in forest development, recovery from disturbance, and microsite differences.

Garrison, George A., and Jon M. Skovlin. NORTHWEST RANGE-PLANT SYMBOLS / ADAPTED TO AUTOMATIC DATA PROCESSING. Pacific NW Forest & Range Expt. Sta., Res. Pap. 35. iv + 143 p. Aug. 1960. WR 106: 4

A listing by alphabetical and numerical codes of grasses, grasslike plants, forbs, and shrubs and trees for convenience in field recording and automatic processing.

Hovind, H. J., and C. E. Rieck. BASAL AREA AND POINT SAMPLING / INTERPRETATION AND APPLICATION. Wis. Conserv. Dept., Tech. Bull. no. 23. 52 p., 14 figs. 1961. WR 106: 4

"This paper puts together much of the information previously published on basal area and point sampling, with emphasis upon the practical use of point-sampling in forest management in Wisconsin."

Jessen, Robert, and Richard Lound. AN EVALUATION OF A SURVEY TECHNIQUE FOR SUBMERGED AQUATIC PLANTS. Minn. Dept. Conserv., Game Invest. Rept. no. 6. 10 p. + 4 figs. Jan. 1962. WR 106: 4

Summary: A technique for determining the occurrence and abundance of submerged aquatic vegetation was tested in the fall of 1959 on Little Coon Lake, Anoka County, Minnesota. This technique consists essentially of making a series of four rake casts or four visual determinations of the submerged aquatic plants at a series of systematically placed sampling stations. Results of the evaluation indicate the technique is consistent and with its use, it is possible to evaluate numerically the occurrence and abundance of submerged vegetation.

Makhonina, G. I., I. V. Molchanova, E. N. Subbotina, N. V. Timofeev-Resovskii, A. A. Titlyanova, and A. N. Tyuryukanov. [THE EXPERIMENTAL INVESTIGATION OF THE DISTRIBUTION OF RADIOISOTOPES IN NATURAL BIOGEOCOENOSES.] Doklady Akad. Nauk SSSR (Bot. Sci.) 133(1/6): 141-143. 1961. [From Biol. Abstr. 37(5), 1962, from Doklady Akad. Nauk SSSR 133(2), 1960.] WR 106: 4

Translation [from Russian]. The plants were planted in one meter plots and sprinkled with radioisotopes. The portion of the plants above ground and roots were reduced to ash. These were measured for activity. Tables give the results obtained for 16 plants. The experiments make it possible to judge the behavior of elements in the biogeocoenoses that were studied, the mobility of the fraction of those elements which goes into solution in the soil with water and is absorbed by the soils, the loss by the above ground mass of the plant of elements absorbed by the soil, their absorption by roots and their distribution through the soil profile.--From abstr. by Lucile Walten.

PLANTS--FLORAS, COMMUNITIES, TAXONOMY

Burk, Carl John. A FLORISTIC STUDY OF THE OUTER BANKS OF NORTH CAROLINA. Ph.D. thesis, Univ. N. C. 129 p. 1961. [Abstr. in Dissertation Abstr. 22 (10), 1962.] WR 106: 4

Cooperrider, Tom S. (Kent State Univ., Kent, Ohio.) THE FLORA OF NORTH-FACING SLOPES COMPARED TO THAT OF THE SURROUNDING AREA IN EASTERN IOWA. Am. Midland Nat. 67(2): 368-372, 1 fig. Apr. 1962. WR 106: 4

Abstract: In a tri-county Iowa area, 13% of the species of vascular plants growing on north-facing slopes show a marked degree of limitation to this topographic feature. These species represent 2% of the total flora of the area.

Igoshina, K. N. [AN EXPERIMENT IN ESTABLISHING BOTANICO-GEOGRAPHIC REGIONS IN THE URALS ON THE BASIS OF ZONAL FLORAL GROUPS.] Bot. Zhur. 46(2): 183-200, maps. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962, from Referat. Zhur., Biol., 1961, no. 16V176.] WR 106: 4

Translation [from Russian]. Original with English summary. Individual parts of the Urals are located in the Arctic, forest, and steppe regions.

PLANTS--FLORAS, COMMUNITIES, TAXONOMY--Continued

Each region is further broken down into zones characterized by the dominance of definite floral groups. Among the latter the author mentions the following zones: the euarctic, the arcticalpine, the subalpine, the hypoarctic, the plurizonal, the broadly boreal, the taiga, the nemoral-boreal, the nemoral, the forest-steppe, and the steppe. Brief characterizations of the regions, zones, subzones, belts, provinces, and districts are given.--From abstr.

Mohlenbrock, Robert H., Gary E. Dillard, and Thomas S. Abney. (Southern Ill. Univ., Carbondale.) A SURVEY OF SOUTHERN ILLINOIS AQUATIC VASCULAR PLANTS. Ohio J. Sci. 61(5): 262-273, illus. 1961. [From Biol. Abstr. 38(1), 1962.] WR 106: 5

Quarterman, Elsie, and Catherine Keever. (Vanderbilt Univ., Nashville 5, Tenn.) SOUTHERN MIXED HARDWOOD FOREST: CLIMAX IN THE SOUTHEASTERN COASTAL PLAIN, U. S. A. Ecol. Monog. 32(2): 167-185, 2 figs. Spring 1962. WR 106: 5
This is a complex forest in which a number of species share dominance, but there is, at present, no grouping of these many species into association segregates. In spite of its complexity, however, the Southern Mixed Hardwood Forest is a recognizable vegetational entity.--From summ.

PLANTS--FOREST SURVEYS

Hueck, Kurt. LAS REGIONES FORESTALES DE SUD AMERICA. [THE FOREST REGIONS OF SOUTH AMERICA.] Bol. Inst. Forest. Latino Amer. Invest. y Capacitacion 2: 1-40, illus., map. 1957. [From Biol. Abstr. 37(1), 1962.] WR 106: 5
[In Spanish] with English summary. This paper represents the 1st attempt to classify the existing South American forests into regions and subregions. A more detailed study is under preparation. Thirty four regions are distinguished. A supplement lists 9 regions without forests, or where forests cannot exist. Numerous charts, a map, and photographs of typical vegetation of the various regions are included.--M. D. S.

WILDLIFE--NEW GAME SERIES

GEORGIA OUTDOORS. Published monthly by the Ga. Game & Fish Comm., 401 State Capitol, Atlanta. Vol. 1, no. 1. 4 p., illus. Apr. 1962. WR 106: 5
An attractive, informative, newsletter type of publication evidently designed to supplement Georgia Game & Fish which is published twice annually.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Cheng, Tso-Hsin. [THE WILD ANIMALS AND BIRDS OF CHINA.] Priroda 10: 45-50. 1959. [From Biol. Abstr. 38(2), 1962, from Referat. Zhur., Biol., 1960, no. 99663.] WR 106: 5
Translation [from Russian]. Approximately 1800 spp. of terrestrial vertebrates (approximately 10% of the world's fauna) live in China. Seven zoogeographical areas can be distinguished: North-Eastern, Northern, Mongolia-Sinkiang, Kukunoro-Tibet (which belongs to the Palaearctic region), Central, South-Western, and Southern (Eastern region). A list of spp. which are characteristic of each region is presented. Maps are included.

Jaeger, Edmund C. DESERT WILDLIFE. Stanford Univ. Press. v + 308 p., illus. 1961. $5.95. WR 106: 5
This is a revision of Jaeger's popular Our Desert Neighbors [see WR 65: 5] with additional chapters, many new field notes, photographs and sketches. "A series of intimate and authentic sketches depicting the lives of native animals of our Southwestern deserts, from mammals to birds and reptiles, as well as many of the lesser denizens such as land snails, scorpions, millepedes and common insects of special interest. The mammals and birds have been given

specially full treatment." Twenty of the 42 chapters deal with mammals. Laymen will be pleased to find this book readable, and professional biologists will find it factual--complete with annotations from the literature.

WILDLIFE--NATURAL AREAS & REFUGES

Redmond, Howard R. (Gulf States Paper Corp., Tuscaloosa, Ala.) WILDLIFE RESOURCES OF THE BLACK BELT WITH EMPHASIS ON WHAT IS BEING DONE AT WESTERVELT GAME PRESERVE. J. Ala. Acad. Sci. 32(1): 497-500. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 6

Through better protection of existing game species, the Black Belt of Alabama has become one of the better hunting areas in the South. Westervelt Game Preserve has been under combined wildlife and timber management for six years. It is recognized that the two resources are compatible, and that the combined system of management has improved the economic value of the land.--J. C. O'Kelley.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Barnard, P. J. THE PHENOMENON OF GAME MIGRATION IN THE KALAHARI-GEMSBOK NATIONAL PARK WITH A DISCUSSION OF VARIOUS MARKING METHODS TO FACILITATE A STUDY OF THE ROUTES FOLLOWED. Koedoe (Pretoria) 4: 178-194. 1961. [From J. Mammal. 43(2), 1962.] WR 106: 6

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Albert, Thomas F. (448 West Sickles St., Kennett Square, Pa.) THE EFFECT OF DDT ON THE SPERM PRODUCTION OF THE DOMESTIC FOWL. Auk 79(1): 104-107, 1 fig. Jan. 1962. WR 106: 6

"DDT in the diet of the domestic fowl can greatly reduce sperm production, although at the levels used [0.1-0.3 per cent DDT by weight], toxicity symptoms appeared within a few days after the sperm production began to decrease."

Bernard, Richard F. (Mich. State Univ., East Lansing.) SECONDARY DDT POISONING IN A SPARROW HAWK. Auk 79(2): 276-277. Apr. 1962. WR 106: 6

An adult ♂ sparrow hawk died in tremors after consuming parts of 9 contaminated house sparrows in 5 days. The brain, heart, liver, and part of the breast muscle of the hawk were found to contain amounts of DDT roughly comparable to those found in corresponding tissues in the sparrows.

Cottam, Clarence. (Welder Wildl. Found., Sinton, Texas.) PESTICIDES AND WATER POLLUTION. Compost Sci. 2(2): 16-22, illus. 1961. [From Biol. Abstr. 37(1), 1962.] WR 106: 6

The increasing use and variety of extremely toxic, broad spectrum, stable chemicals as pesticides throughout America necessitate advanced planning and better coordination in the management and use of chemical controls. Contamination of surface and ground waters may be serious and its correction slow and costly. It is essential that public and private forces unite to support a coordinated program of research. A few additional "needs" are submitted for consideration, such as the use of toxicants that are selective and do the least damage to desirable forms of life; more emphasis on biological and cultural controls and so on.--Author.

Cross, D. L., H. L. King, and Dean L. Haynes. (Mich. State Univ., East Lansing.) THE EFFECTS OF DDT IN THE DIET OF JAPANESE QUAIL. Mich. Agr. Expt. Sta., Quart. Bull. 44(4): 688-696, 3 figs. May 1962. WR 106: 6

Technical DDT dissolved in acetone was added to diet of Coturnix coturnix japonica at levels 100, 300, 500, 700 ppm and control. Five pairs of quail were used at each level in two experiments involving different age classes:

nature (50-day) birds for a 30-day trial and immature (25-day) birds for 55 days. There was complete mortality at 500 and 700 ppm, with some evidence of greater mortality at 300. Growth was not affected up to 300 ppm and no differences in egg production were noted. Survival under starvation was less than controls at all levels. Summary states that application of DDT in oil to forage crops results in a residue of about 15 ppm; that this work shows no effect of DDT up to 100 ppm; "therefore, it appears unlikely that normal field applications of DDT will cause residues hazardous to this species of bird."--Don W. Hayne.

Dow, Sumner A. (Game & Fish Comm., Nashville, Tenn.) PESTICIDES AND WILDLIFE IN TENNESSEE. Migrant 31(2): 21-29. 1960. [From Biol. Abstr. 37 (1), 1962.] WR 106: 7

The general use of insecticides and other poisons is explained and some effects of these on wildlife are described. The use of these in Tennessee is summarized; the use has been limited and no great loss of wildlife has occurred in this State.--J. T. Tanner.

Drury, William H., Jr. PESTICIDE APPLICATIONS AND THE PUBLIC WELFARE. Mass. Audubon 46(1): 24-35. Autumn 1961. WR 106: 7

A review of studies that have shown common insecticides to have significant effects on wildlife. A table is included showing toxicities of various compounds to rats and rabbits. Recommendations: spraying should be controlled by state agencies; only built-up areas with little wildlife should be sprayed; more research should be conducted on long-range effects of insecticides.--Carolyn S. Trapp.

Prier, R. F., and P. H. Derse. (Wis. Alumni Res. Foundation, Madison.) EVALUATION OF THE HAZARD OF SECONDARY POISONING BY WARFARIN-POISONED RODENTS. J. Am. Vet. Med. Assoc. 140(4): 351-354. 15 Feb. 1962. WR 106: 7

Summary: Dogs were killed by a continuous primary intake of warfarin of approximately 0.2 mg/kg daily. Dogs were unaffected by continuous ingestion of mice which had eaten warfarin bait. The dogs consumed approximately 2.5 mg/kg daily. These findings, seemingly at odds, indicate a high level of in vivo detoxification. Secondary intoxication in dogs caused by the ingestion of mice previously treated with warfarin is, on the basis of the present findings, outside the realm of practical possibility.

Roelofs, E. W., and Charles Shick. SPRAY PROGRAMS AND WILDLIFE. Mich. State Univ. Ext. Bull. E-375. 8 p. Mar. 1962. WR 106: 7

The nature of pesticides and the nature of damage to fish and wildlife are discussed. Precautions in the use of pesticides are given which serve to decrease wildlife losses.

U. S. Fish & Wildlife Service. EFFECTS OF PESTICIDES ON FISH AND WILDLIFE: A REVIEW OF INVESTIGATIONS DURING 1960. F&WS, Circ. no. 143. v + 52 p. 1962. WR 106: 7

"This report summarizes research findings for 1960, and also some earlier work of the Bureau of Commercial Fisheries. Reports published by Service personnel in 1960 are reviewed, and progress is reported for research studies underway. Certain publications appearing in 1960 that were prepared by other scientists are reviewed also. Separate accounts summarize the studies of the Branch of Fisheries Research and the Branch of Wildlife Research, both in the Bureau of Sport Fisheries and Wildlife, and the Branch of Shellfisheries of the Division of Biological Research in the Bureau of Commercial Fisheries. Recommendations are made for the use of pesticides that will cause minimum damage to wildlife; and additional research needs are outlined."

WILDLIFE--PARASITES & DISEASES

Constantine, Denny G. (Communicable Disease Center, University Park, N. Mex.) RABIES TRANSMISSION BY NONBITE ROUTE. Public Health Repts. 77(4): 287-289. Apr. 1962. WR 106: 8

Development of rabies in native carnivores kept in bat-proof and arthropod-proof cages in a bat cave indicates bat-to-carnivore transmission by an airborne medium such as an aerosol.

Maramorosch, Karl, editor. BIOLOGICAL TRANSMISSION OF DISEASE AGENTS / SYMPOSIUM HELD UNDER THE AUSPICES OF THE ENTOMOLOGICAL SOCIETY OF AMERICA, ATLANTIC CITY, 1960. Academic Press (N. Y. & London). xii + 192 p., illus. 1962. $7.00. WR 106: 8

Includes 5 papers on agents of plant disease and 8 papers on agents of human and animal diseases. The following should be of interest to wildlifers: Mosquitoes and virus diseases, William C. Reeves; Sandflies and sandfly-borne diseases, Herbert C. Barnett; Tabanidae as disease vectors, Darrell W. Anthony; Recent advances in the study of tsetse-borne diseases, K. C. Willett; Some considerations of mites and ticks as vectors of human disease, R. Traub; Ticks as virus vectors in Eastern Europe, D. Blaškovic and J. Řehaček; Helminths as carriers of microbial disease agents of man and animals, Cornelius B. Philip; Control of insect vectors of disease, by A. W. Lindquist.

Rogers, W. P. THE NATURE OF PARASITISM / THE RELATIONSHIP OF SOME METAZOAN PARASITES TO THEIR HOSTS. Academic Press (N. Y. & London). ix + 287 p., 40 figs. 1962. $7.50. WR 106: 8

In an effort to provoke interest in the nature of parasitism "the main emphasis has been placed on aspects of parasitism not usually covered in other works on the subject, nor thoroughly investigated in current research. These aspects include physiological features that distinguish parasites from their free-living relatives, elements of the environments of parasites that affect specificity, and features of the host-parasite relationship such as infectiousness and the factors the parasite needs from the host in order to survive. Throughout the book the author has indicated the areas in need of study in order to complete our understanding of the nature and effects of parasitism."

Theodor, O. (Hebrew Univ., Jerusalem, Israel.) A SURVEY OF THE PARASITES OF WILD MAMMALS AND BIRDS IN ISRAEL (1956-1960). Bull. Res. Council Israel, Sec. B. Zool. 9B(4): 208-211. 1961. [From Biol. Abstr. 37(1), 1962.] WR 106: 8

Vysotskii, B. V., and V. K. Rakhilin. (Vladivostok Inst. Epidemiol., Microbiol. and Hyg., USSR.) [RESULTS OF INVESTIGATIONS OF CERTAIN BIRDS AND FRESHWATER ANIMALS WITH REGARD TO LEPTOSPIROSIS.] Zhur. Mikrobiol., Epidemiol. i Immunobiol. 31(9): 1625-1627, illus. 1960. [From Biol. Abstr. 37(4), 1962, from Zhur. Mikrobiol., Epidemiol. i Immunobiol. 31(9): 42-44. 1960.] WR 106: 8

Translation [from Russian]. Investigations of 126 water birds in a natural focus of leptospirosis among rpdents and of 10 turtles by means of the agglutination test with leptospira belonging to different serological types led to negative results. In the serum of a single wild goose caught outside the focus mentioned above, agglutinins to L. saxkoebing were found in a titer of 400. To judge the part played by birds in the epidemiology of leptospirosis further special investigations will have to be carried out.--Authors.

WILDLIFE--POPULATIONS & FLUCTUATIONS

Andrewartha, H. G. INTRODUCTION TO THE STUDY OF ANIMAL POPULATIONS. Univ. Chicago Press. xvii + 281 p., illus. 1961. $5.00. WR 106: 8

H. G. Andrewartha is perhaps best known as co-author (with L. C. Birch) of The Distribution and Abundance of Animals, published in 1954 [WR 78: 15]. The present volume is an outgrowth of an entirely quantitative and largely experimental course in practical ecology devised by the author. The book is in two parts. The first discusses basic ecological theory from the standpoint

of animal distribution and abundance considered as merely special cases of the general interaction of environment and individual animals or populations of animals. Much of the detailed material appearing in the 1954 publication has been boiled down in this section and it also contains many examples from the ecological literature together with demonstrations of quantitative analyses using appropriate statistical methods. Part II contains twenty experiments, presented in the manner of a laboratory manual, and dealing with populations of living animals suitable for experimental study of dispersal, distribution, density, and physiological and behavioral responses of animals to the various environmental components. In each case the appropriate statistical analysis of the data obtained is fully demonstrated, and it merely remains for the wildlife worker to extrapolate these technics to similar data he is likely to obtain in the field. Suggested readings, and a selected bibliography provide a comprehensive review of this approach to population ecology.--Robert F. Scott.

WILDLIFE--BIOMETRICS

Barnett, V. D. (Univ. Manchester, Manchester, England.) THE MONTE CARLO SOLUTION OF A COMPETING SPECIES PROBLEM. Biometrics 18(1): 76-103. Mar. 1962. WR 106: 9

"This paper is devoted to a discussion of the mathematical properties of a model representing the interspecies competition between the two species of flour beetle, Tribolium castaneum and Tribolium confusum, under specific environmental conditions, and, in particular, to the evaluation of extinction probabilities for the two species for a wide range of initial population sizes."--V. Schultz.

Beament, J. W. L., editor. MODELS AND ANALOUGES IN BIOLOGY -- SYMPOSIA OF THE SOCIETY FOR EXPERIMENTAL BIOLOGY. Cambridge Univ. Press. 255 p. 1960. 50 shillings. [Reviewed by M. V. Brian in Biometrics 18(1), 1962.] WR 106: 9
Courtesy/ V. Schultz.

Leslie, D. H. (Bur. Animal Population, Dept. Zoological Field Studies, Oxford, England.) A STOCHASTIC MODEL FOR TWO COMPETING SPECIES OF TRIBOLIUM AND ITS APPLICATION TO SOME EXPERIMENTAL DATA. Biometrika 49(1&2): 1-25. June 1962. WR 106: 9

"This simple two age-class model does not provide an adequate description of these experimental Tribolium populations. The computed variances of the distributions of adult numbers, and the serial correlations for the single species systems in the region of their stationary states, were all less in the model populations than those observed in Park's experiments. Nevertheless, although this model has failed in its primary purpose, in a sense it can be regarded as a first approximation, and from this point of view it has performed one very useful function, in pointing to at least one way in which the observed data could be analysed."--V. Schultz.

Reyment, R. A. (Univ. Stockholm, Stockholm, Sweden.) OBSERVATIONS ON HOMOGENEITY OF COVARIANCE MATRICES IN PALEONTOLOGIC BIOMETRY. Biometrics 18 (1): 1-11. Mar. 1962. WR 106: 9

Author's summary: Some examples of heterogeneous covariance matrices in infra-specific paleontologic and neontologic material are discussed. A slightly modified form of the generalized statistical distance between two populations is suggested, which may be useful with heterogeneous samples from an interbreeding population, or otherwise on the infra-specific level. The presentation is based on material of ostracods, cephalopods and turtles.--Courtesy/ V. Schultz.

WILDLIFE--TECHNIQUES

Essler, Warren O. (Univ. Vermont. Burlington.) RADIO TELEMETRY OF ELECTRO-CARDIOGRAM AND BODY TEMPERATURES FROM SURGICALLY IMPLANTED TRANSMITTERS. State Univ. Iowa Studies Nat. Hist. 20(4): 1-35, 22 figs. 1961. WR 106: 10

Summary: This investigation included the development of systems for measuring body temperatures and heart rates for long periods of time (several months) by means of subdermally implanted radio telemeters. Pilot experiments showing several applications of the methods to physiological research were conducted. [Proposed applications include field studies of hibernating woodchucks and bears.] Data concerning 24-hour rhythms in heart rates and body temperatures and their interrelation were gathered and analyzed.

Hall, E. Raymond. (Museum Nat. Hist., Univ. Kans., Lawrence.) COLLECTING AND PREPARING STUDY SPECIMENS OF VERTEBRATES. Museum Nat. Hist., Univ. Kans. Misc. Publ. 30. p. 1-46, 34 figs. 21 May 1962. 50¢, paper. WR 106: 10

Contains sections on recent vertebrates (mammals, birds, amphibians and reptiles, fishes) and fossil vertebrates.

Jackson, C. F. (Univ. N. H., Durham.) USE OF PAPER CHROMATOGRAPHY IN IDENTIFYING MEAT OF GAME ANIMALS. N. H. Fish & Game Dept., Tech. Circ. no. 19, 15 p., 5 figs. 1962. WR 106: 10

Ascending paper chromatography was applied for the rapid identification of meat from game and domestic animals. Release of the amino acids from a meat sample was accomplished by three methods. Each method produced a different chromatogram from one sample when treated with the chromogenic agent, ninhydrin. A mixture of n-propanol and ammonium hydroxide was the mobile solvent. The separated amino acids were not identified, identification of a meat sample was made by comparing its chromatogram with that of a known sample. Wild species from the same general area showed consistent results, but eastern and western races showed differences, as did domestic species of different breeds.--William L. Reichel.

Odum, E. P., R. P. Martin, and B. C. Loughman. (Univ. Ga., Athens.) SCANNING SYSTEMS FOR THE RAPID DETERMINATION OF RADIOACTIVITY IN ECOLOGICAL MATERIALS. Ecology 43(1): 171-173, 2 figs. Winter 1962. WR 106: 10

In ecology, radioisotopes are proving useful as "tags" in population studies, as aids in measuring energy flow rates in nature, and as a means of determining the movement of elements in biogeochemical cycles. Certain scanning systems, originally designed for paper chromographic work, can be adapted for use in ecological research. In this note, 2 systems are described which have been found to be useful for the rapid determination of radioactivity in environmental materials. These systems are cheaper, more versatile, and faster than automatic sample changers.

Orr, Richard H., and Don M. deKoven. (33 E. 68th St., N.Y.C.) THE SUMMARY --THE MOST USED AND MOST NEGLECTED PART OF SCIENTIFIC PAPERS. J. Albert Einstein Med. Center 8(4): 270-276. 1960. [From Biol. Abstr. 37(5), 1962.] WR 106: 10

In addition to promoting wider dissemination of an author's work, and enhancing the reputation of a scientific journal, summaries of the proper type and quality furnish abstracting, indexing, and translating services with excellent material. A good author-written summary is very similar to an informative or comprehensive abstract and can be used by many abstracting services with little modification, or can be transformed into a "primary" abstract by transposing it from the end to the beginning of the article. The prevalence of poorly written authors' summaries indicates a lack of appreciation for the summary's vital role in modern scientific communication. The art of writing summaries is demanding, but the essential requirements are simple: (A) The summary must be understandable without reference to the paper. (B) It must set forth in specific terms all the major points of the paper. (C) It should rarely exceed 250 words. (D) It should preserve the form of the paper, in miniature. (E) It must not contain material not covered in the paper. If authors and editors concentrate on improving the quality of summaries, and these summaries are then supplied to appropriate abstracting and indexing services, a very significant increase in the over-all efficiency of scientific communication will result.--Authors.

Phillips, G. C., and K. East. THE RELATIVE EFFICIENCY OF SOME SMALL MAMMAL TRAPS. Proc. Zool. Soc. London 137(4): 637-640. Dec. 1961. WR 106: 11

A comparison of the Longworth live trap with 5 kinds of break-back traps. From considerations of cost, size, and efficiency the metal break-backs are the most useful traps to take on a mobile collecting trip but a small amount of wastage due to damaged specimens must be expected.

Swank, Wendell G. (Ariz. Game & Fish Dept., Phoenix.) MANIPULATION OF HUNTING REGULATIONS AS A MANAGEMENT MEASURE. J. Forestry 60(1) pt. 1: 30-32, 2 figs. Jan. 1962. WR 106: 11

"Today among game management professionals the success of a state's big game management program is generally measured by its hunting regulations. Those with the most liberal regulations are considered progressive, wide awake, and up to date. Conservative regulations with no provision for pre-season hunts, post season hunts, multiple bag limits and either sex deer hunts stamp a state as being antiquated in its big game management program."

Talbot, Lee M., and Martha H. Talbot. FLAXEDIL AND OTHER DRUGS IN FIELD IMMOBILIZATION AND TRANSLOCATION OF LARGE MAMMALS IN EAST AFRICA. J. Mammal. 43(1): 76-88, 1 fig. Feb. 1962. WR 106: 11

Abstract: Using field immobilization techniques in the present East African ecological study, specimens and data are collected from captured animals which are then marked and released or tranquilized and translocated. Delivery is by automatic projectile syringes fired from a CO_2 pistol. Experiments with various immobilizing drug preparations affecting the central nervous system, the sympathetic and parasympathetic ganglia, and the myoneural junctions showed this last group, the muscle relaxants, most effective for field immobilization. To date over 200 animals of 14 species have been immobilized with various drugs and the most successful and generally applicable drug is Flaxedil. Normal neuromuscular transmission and the effects on it of muscle relaxants are described, with special reference to field immobilization. The results of field immobilization and immediate release using Flaxedil on 87 wild animals of ten species are presented and discussed. Thirty-two animals of three species were immobilized with Flaxedil, then tranquilized and translocated, and the results are summarized and discussed. Flaxedil is compared with other immobilizing drugs, including preparations of succinylcholine chloride, curare, nicotine, Sernyl, and Cap-Chur Barb.

Thompson, Richard L. AN INVESTIGATION OF SOME TECHNIQUES FOR MEASURING AVAILABILITY OF OAK MAST AND DEER BROWSE. M.S. thesis, Va. Polytech. Inst. 85 p. 1962. WR 106: 11

A comparison of mast trap and ground pick-up plots indicated no significant difference between the efficiency of the two methods, however, an efficient mast trap was devised. Mast availability in deer exclosures versus open study areas and between selectively cut and uncut stands was compared. The number-of-twigs-per-plot and weight-per-plot were correlated in a browse study.--Burd S. McGinnes.

Whelan, James B. THE CORRELATION BETWEEN AVAILABLE DEER BROWSE, FOREST COVER TYPE AND FOREST SITE. M.S. thesis, Va. Polytech. Inst. 125 p. 1962. WR 106: 11

Eight site quality measurements were made in two forest types to test the correlation between these eight variables and the weight of clipped browse. Number of stems per acre and depth of the A_1 soil horizon were the only variables significantly related to browse weights, yet these site qualities accounted for only a fractional portion of the variation in browse weights.--Burd S. McGinnes.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Bencze, L. A VADÁLLOMÁNY ÉS S KÖRNYEZET KAPCSOLATAI. [RELATION BETWEEN WILDLIFE AND ENVIRONMENT.] Mezőgazdasáti Kiado (Budapest). 123 p. 1961. [From Bibliog. Agr. 26(4), 1962.] WR 106: 12

[In Hungarian.] Includes forest wildlife management.

Horning, W. H. WILDLIFE AND FEDERAL LANDS--THE BUREAU OF LAND MANAGEMENT IN WESTERN OREGON. J. Forestry 60(1) pt. 1: 24-25. Jan. 1962. WR 106: 12

The forest openings created by the cutting program of the Bureau of Land Management in Western Oregon are quickly invaded by natural vegetation. This supply of palatable forage causes a virtual irruption of deer, elk, and other animals. Attempts to regenerate cutover areas are seriously handicapped by the increased wildlife population. Efforts are being made to develop repellents which would make tree seedlings unpalatable to deer and the use of deer-proof fences is being tested. Rodent control is exerted through the use of treated tree seed and through baiting plantations and areas of good seed fall with rodenticides. Control of damage caused by black bears and porcupines is discussed. It is estimated that the annual amount chargeable to wildlife damage is $1,500,000.

Leedy, Daniel L. (Bur. Sport Fisheries & Wildl., USDI, Washington, D. C.) A LOOK AT THE FUTURE. J. Forestry 60(1) pt. 1: 47-49. Jan. 1962. WR 106: 12

The interdependency of plant and animal species and the complexity of ecological relationships are great and are poorly understood. It is likely that tagging with radioactive materials will play an increasingly important role in unraveling some of these relationships and, perhaps, infrared methods, miniature radio transmitters, and improved sampling techniques may be helpful in wildlife inventories. The future role of chemicals, physiological measures, scare devices, and adequate harvests is discussed.

Newman, Coleman C., and S. T. Carlson. (Park Forest & Wildl. Protection, Natl. Park Serv., Washington, D. C.) WILDLIFE AND FEDERAL LANDS--THE NATIONAL PARK SERVICE. J. Forestry 60(1) pt. 1: 26-27, 1 fig. Jan. 1962. WR 106: 12

Among the functions of the National Park Service is the development of a program for the conservation of representative examples of undisturbed wildlands. The plan to maintain wildlife for public enjoyment while protecting other park values involves keeping disturbances to a minimum, protecting and perpetuating each native form, eliminating or reducing exotics, reintroducing extirpated species, and regulating hoofed animal populations within carrying capacity of the range.

Riney, T., and R. H. N. Smithers. (IUCN, Morges prés Lausanne, Switzerland.) WILDLIFE AND HUMAN VALUES IN SOUTHERN RHODESIA. Federal Sci. Congr. 1960: 1-11. 1960. WR 106: 12

Separate of paper presented at 1960 Federal Science Congress. Summary: The survival of wildlife in Rhodesia is dependent upon the survival of a suitable habitat for each species. Since changes in land tenure or type of land use can result in drastic changes in animal habitats, considerable importance is thus attached to the attitudes and objectives of organizations or individuals in a position to influence habitats on a large scale. The present position of wildlife in Southern Rhodesia is reviewed from the aspect of those government departments and private organizations which are directly or indirectly concerned with game. For the development of appropriate wildlife research there is an obvious need to direct research along broad enough lines to service the research needs of all organizations concerned with wildlife, because of the interdependent objectives and interests of these organizations. From the aspect of land utilization it is suggested that the wildlife potential for a given piece of land, either as a supplementary or a major form of land use, be considered alongside other potential uses before the final administrative classification is made.

Swift, Lloyd W. (Forest Service, USDA, Washington, D. C.) WILDLIFE AND FEDERAL LANDS--THE NATIONAL FORESTS. J. Forestry 60(1) pt. 1: 21-23, 3 figs. Jan. 1962. WR 106: 13

Big-game abundance and the approximate harvest on the national forests in 1961 are shown. Illustrations of successful coordination of forest land management practices and consideration of wildlife values and research for the future are presented.

Wagar, John Alan. THE CARRYING CAPACITY OF WILD LANDS FOR RECREATION. Ph.D. thesis, Univ. Mich. 115 p. 1961. [From long abstr. in Dissertation Abstr. 12(7), 1962.] WR 106: 13

This study considers the human needs and desires that motivate wildland activities and evaluates the probable effects of crowding on the satisfaction of these needs and desires. Ecological considerations form a part of the study and include an experiment in which recreational foot traffic was stimulated on a series of vegetated plots. Management procedures such as zoning, engineering, interpretation, and persuasion are also discussed.

WILDLIFE--HUNTING AREAS & PROBLEMS

Burger, George V. LICENSED SHOOTING PRESERVES IN WISCONSIN. Wis. Conserv. Dept. & Sportsmen's Serv. Bur., Tech. Bull. no. 24. 40 p., illus. 1962. WR 106: 13

Wis. first licensed shooting preserves in 1931. In 25 years, from 1932 through 1957, shooting preserve operators liberated 171,362 pheasants. The total harvest amounts to 52% of the reported releases. The Wis. shooting-preserve system has not resulted in financial gain for preserve licensees. Shooting preserves in Wis. provide shooting for a portion of the state's hunters, and have fostered good relations between farmers and hunters. A major contribution of preserves has been the preservation and improvement of wildlife habitat, especially marshlands. The major revisions of regulations made in 1959 are listed.--From summ.

Klomp, H., and A. D. Voûte. BESCHOUWINGEN OVER DE IN VLOED VAN JACHT EN BESCHERMING OP DE AANTALREGULATIE BY DIEREN. [CONSIDERATIONS CONCERNING THE EFFECT OF HUNTING AND PROTECTION ON THE REGULATION OF THE ANIMAL POPULATION.] Med. Inst. Toeg. Biol. Onderz. Nat. 51: 4-10. 1961. [From Biol. Abstr. 37 (3), 1962.] WR 106: 13

[In Dutch.] On the basis of several assumptions, the authors plot graphs to show that harvesting of a population of animals independent of its density may lead to a labile density of the population. When, due to unfavorable conditions, the density falls below this point the population will become extinct. Even protection can not save such a population from extinction.

Voûte, A. D. OVER JACHT EN AANTAL REGULATIE VAN WILD. [CONCERNING HUNTING AND REGULATION OF POPULATION DENSITIES OF GAME.] Med. Inst. Toeg. Biol. Onderz. Nat. 51: 11-15. 1961. [From Biol. Abstr. 37(3), 1962.] WR 106: 13

[In Dutch.] The final adjustment of population densities occurs between fall and the next breeding season; it is therefore recommended that hunting be restricted to the fall.--A. van Tienhoven.

WILDLIFE--FOOD HABITS & TECHNIQUES

Harrison, J. L. (Nanyang Univ., Singapore 22.) THE DISTRIBUTION OF FEEDING HABITS AMONG ANIMALS IN A TROPICAL RAIN FOREST. J. Animal Ecol. 31(1): 53-63, 2 figs. Feb. 1962. WR 106: 13

Summary: Based on experience in Malaysia and Australia, a classification is proposed of the birds and mammals of Tropical Rain forest into six communities defined by the level at which they occur and their range of foodstuffs. The communities are: (1) Upper Air, insectivorous and carnivorous birds and

bats; (2) Canopy, birds and mammals feeding largely on leaves and fruit; (3) Middle-zone flying, mainly insectivorous birds and bats; (4) Middle-zone scansorial, mammals of mixed feeding habits ranging up and down the trunks; (5) Large Ground, large herbivorous species; and (6) Small Ground, small mammals and birds of varied diet searching the forest floor.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Cocozza, James, and Aurelio Malaga Alba. (Pan American Sanitary Bur., El Paso, Texas.) WILDLIFE CONTROL PROJECT IN BAJA CALIFORNIA. Public Health Repts. 77(2): 147-151. Feb. 1962. WR 106: 14

A description of an effective coyote control program carried out in 1961. Bait (horsemeat poisoned with 1080) was distributed over an area covering nearly 5,000 square miles during a 6-day period. Bait stations were 5 miles apart. The cost of the operation amounted to about $400.00. This sum included the cost of the horses donated by the livestock association, use of vehicles, gasoline, hire of guides, and labor. An estimated 10,230 animals were destroyed.

Rediske, J. H., and William H. Lawrence. (Weyerhaeuser Co. Forestry Res. Center, Centralia, Wash.) SELENIUM AS A WILDLIFE REPELLENT FOR DOUGLAS-FIR SEEDLINGS. Forest Sci. 8(2): 142-148, 2 figs. June 1962. WR 106: 14

The threshold tissue level of selenium as selenate ion is 0.5 ppm for Douglas-fir seedlings before toxic levels are attained. Douglas-fir seedlings treated with the maximum amount of systemic selenium as selenate ion (0.5 ppm) did not reduce the consumption of these seedlings by laboratory rabbits. On the basis of coating studies, seedlings would have to contain at least 50-75 ppm selenium to reduce rabbit consumption 50%. Coating Douglas-fir seedlings by dipping in a non-phytotoxic selenium-Phoplex mixture reduced consumption by rabbits to 42% when the coating contained 500 ppm and to 9% when containing 5,000 ppm selenate selenium. In tests with snowshoe hares, a 0.5% (5,000 ppm) selenate selenium coating was more effective than the standard 10% thiram coating in preventing damage.--From summ.

Schulz, H. E. [COMBINED MEASURES FOR PREVENTION OF GAME DAMAGE WITH ITS COMPLEX ORIGINS.] Deut. Akad. der Landwirtwiss. Tagungsber. 37: 23-48. 1961. [From Bibliog. Agr. 26(5), 1962.] WR 106: 14

In German with English summary. Forest protection.

Smidt, L. [CONTRIBUTION TO THE PROBLEM OF WILDLIFE DAMAGES.] Forstl. Bundesversanst. Mariabrunn in Schonbrunn Informidienst 51: 1-2. IN: Allg. Forstztg. 72(23/24). Dec. 1961. [From Bibliog. Agr. 26(5), 1962.] WR 106: 14

In German.

Wardle, P. (Dept. Sci. & Indust. Res., Christchurch, New Zealand.) THE EFFECT OF DEER ON SUBALPINE FOREST AND SCRUB. Proc. New Zealand Ecol. Soc. 8: 52-54, illus. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 14

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Arizona. [ARIZONA GAME AND FISH DEPT., ANNUAL REPORT, 1960-1961.] Ariz. Wildl. Views 9(1): 1-55, illus. Jan. 1962. WR 106: 14

Entire issue devoted to annual report. Pages 4-14 deal with management with brief reports on: trapping and transplanting of turkey, antelope, Gambel's quail, and bighorn; small game; waterfowl and statewide projects on hunt statistics, game management, development, and research. Big game kill and hunter success for 1960 are tabulated by species. The research conducted at the Ariz. Coop. Wildl. Res. Unit on Gambel's quail, white-tailed deer, javelina, wildlife history, and fish studies, is reviewed on pages 15-18.

Luman, I. D. (Oreg. Game Comm., Portland.) 1961 BIG GAME HARVEST. Oreg. State Game Comm. Bull. 17(5): 3-7, illus. May 1962. WR 106: 15
A total of 265,326 deer hunters reported a record harvest of 163,939 deer. Elk harvest amounted to 12,091 and 418 ♂ antelope were taken. Population trends indicate little change in deer or elk--this is the ninth year that the deer kill has exceeded 100,000.

Massachusetts. DIVISION OF FISHERIES AND GAME ANNUAL REPORT 1961. Mass. Wildl. 13(1): 1-22, illus. Jan.-Feb. 1962. WR 106: 15
Entire issue devoted to annual report. The game section (p. 11-15) includes information on the statewide development project, the game population and harvest surveys, game propagation, and other game work conducted during 1961.

WETLANDS & WILDLIFE

Chabreck, Robert. (La. Wild Life & Fisheries Comm., Grand Chenier.) BETTER DUCK HABITAT. La. Conserv. 14(4): 17-20, 5 figs. Apr. 1962. WR 106: 15
Ten impoundments totaling 22,600 acres have been constructed on the Rockefeller Refuge. [See WR 105: 9.] Freshwater impoundments have proven very attractive to alligators.--Carolyn S. Trapp.

Emerson, Frederick Beauregard. SOME ASPECTS OF THE ECOLOGY AND MANAGEMENT OF WILDLIFE MARSHES IN NEW YORK STATE. Ph.D. thesis, Cornell Univ. 130 p. 1961. [From abstr. in Dissertation Abstr. 22(7), 1962.] WR 106: 15
Only 17 of 123 introductions of 10 species of aquatic plants into 32 wildlife marshes in south-central N. Y. during 1955-60 were rated as "good". Four emergent species selected on their known or potential value for wildlife were given major emphasis in the propagation studies. Zizania aquatica, Scirpus acutus, Scirpus americanus, and Botomus umbellatus. Excessive slope, deep water, and hard impervious bottoms together constitute the major physical factors limiting to plant growth and distribution in the wildlife marshes.

Robel, Robert J. (Utah Coop. Wildl. Res. Unit, Logan.) CHANGES IN SUBMERSED VEGETATION FOLLOWING A CHANGE IN WATER LEVEL. J. Wildl. Mgmt. 26(2): 221-224, 2 figs. Apr. 1962. WR 106: 15
Following a preliminary vegetation survey of a Utah marsh in 1959, the water depth was raised 3 in. in the 1961 growing season. Changes in the growth of submersed vegetation which followed this change in the water level of the marsh were measured and are presented in this paper. Vegetation surveys, consisting of a total of 168 separate vegetation samples per season, were conducted late in the summers of 1959 and 1961. Comparisons of vegetation production were based on oven-dry weights. Vegetation production increased by 32% in the shallow areas but decreased by 35% in the deeper areas. Other changes also resulted from the alteration of the marsh water level, including an increase in the size of the marsh, increase in the amount of food around and near duck-nesting areas, and a more luxuriant growth of alkali bulrush.

FARMLAND & WILDLIFE

Bohart, Charles V. (SCS, Lincoln, Nebr.) 8000 ACRES IN WOODY PLANTINGS FOR NEBRASKA WILDLIFE. Soil Conserv. 27(9): 214-215, 2 figs. Apr. 1962. WR 106: 15
The Nebr. Game Commission since 1947 has established more than 8,000 acres of woody plantings on private land, providing winter cover for pheasants and bobwhite quail. Included are 800 miles of multiflora hedge to provide travel lanes for quail. Red cedar was one of the more important trees planted.--Carolyn S. Trapp.

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) AUDIO-VISUAL AND RURAL MAIL CARRIER FARM GAME SURVEYS; SUMMER, 1959. Game Res. Ohio 1: 8-12, 7 figs. Apr. 1962. WR 106: 16

Progress report. Statewide pheasant populations and brood sizes were below 1958. Early mowing of alfalfa in nw Ohio undoubtedly produced more nest destruction and hen mortality than in 1958. Midsummer rabbit populations declined generally from 1958; the greatest declines occurred in northern Ohio, probably as a result of above-average spring rainfall in that area. Declines since 1958 were reported for quail and doves with increases for crows.--From abstr.

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) AUDIO-VISUAL RABBIT AND QUAIL SURVEYS; JUNE-JULY, 1959. Game Res. Ohio 1: 5-8, 2 figs. Apr. 1962. WR 106: 16

Progress report. Rabbit counts in northern Ohio showed a decrease of 15-20% from 1958; above-average spring rainfall apparently reduced the survival of early born young. Counts in southern Ohio higher than those of 1958 indicate that lessened spring rainfall (1-3 inches less) resulted in increased survival of early spring litters. Quail whistle counts averaged nearly the same as 1957 and 1958 in all regions. A drop in visual observations in 1959 -- during the nesting season peak -- is interpreted to indicate a good nesting season and expectations of better fall populations than in 1958. Mourning dove counts decreased in all regions; the statewide average was down 20%. Crow counts increased over those of 1958 in the western areas and decreased on the eastern routes.--From abstr.

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) AUDIO-VISUAL SPRING FARM GAME SURVEYS, 1959. Game Res. Ohio 1: 3-5, 3 figs. Apr. 1962. WR 106: 16

Abstract of progress report: Spring farm game surveys were made statewide by rural mail carriers from Mar. 30 to Apr. 11, 1959; and in 14 of Ohio's best pheasant counties by Division personnel between Apr. 15 and May 15, 1959. In Region I, the northwestern Ohio lake plain, pheasant populations were about the same as in 1958. Counts in Region II, west-central and southwestern Ohio, were well above those of the preceding year. Region III, northeastern Ohio, also showed a higher spring population. Limited data gathered on other species showed rabbit counts generally higher than in 1958, quail counts about the same, dove counts down about 35%, and crow counts up 20%.

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) FARM GAME HUNTER QUESTIONNAIRE SURVEY, 1959. Game Res. Ohio 1: 13-16, 2 figs. Apr. 1962. WR 106: 16

Progress report. This report summarizes the results of the 1959 upland game season, as indicated by the hunter questionnaire survey. The proportion of hunters reporting hunting different game was about the same as in 1958. Of the total harvest, rabbit comprised 79%, pheasant 19%, and quail 2%. Rabbit and pheasant harvests were about the same as in 1958.--From abstr.

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) RURAL MAIL CARRIER FARM GAME SURVEYS; SPRING AND SUMMER, 1960. Game Res. Ohio 1: 16-19, 2 figs. Apr. 1962. WR 106: 16

Progress report. Spring pheasant counts indicated that the number of breeders in 1960 was about the same as or slightly below that of 1959. The number of quail seen on spring surveys was down 20-30% in all regions. Although nesting success probably was average, summer counts were far below those of 1959 throughout the quail range. Summer rabbit counts were down in all regions and probably reflected a population decline resulting from high winter mortality.--From abstr.

Smith, Ralph H. (N. Y. Conserv. Dept., Albany.) CRAB APPLES FOR WILDLIFE. Conservationist (N. Y.) 16(5): 17-19, illus. Apr.-May 1962. WR 106: 17

Certain of the crab apples come fairly close to providing an ideal perennial winter food for wildlife. Of 80 clones grafted in N. Y., 17 seem to be outstanding for consistent fruit production, persistence, and use for food by wildlife. From the wildlife standpoint, although the entire fruits may be eaten, apparently it is the seeds that are most eagerly sought.

RANGELAND & WILDLIFE

Buechner, H. K., and H. C. Dawkins. (Wash. State Univ., Pullman.) VEGETATION CHANGE INDUCED BY ELEPHANTS AND FIRE IN MURCHISON FALLS NATIONAL PARK, UGANDA. Ecology 42(4): 752-766, 7 figs. Autumn 1961. WR 106: 17

Wooded grasslands, Terminalia woodlands, Cynometra rainforests, and riparian forests are in the process of conversion to treeless grassland through the combined action of elephants and fire. The basic cause of these conspicuous, rapid changes in vegetation seems to lie in an extraordinary increase in the population of elephants resulting from (a) evacuation of people from the area in 1912 because of sleeping sickness and (b) concentration of elephants in the sanctuary because of harassment in regions to which the animals formerly migrated in large numbers. A program for nature conservation within the park includes: (1) the regulation of numbers of elephants to prevent overpopulation and consequent destruction to vegetation and habitat and (2) the perpetuation of representative examples of past vegetation by control of fire.--From summ.

Croft, A. R., and L. Ellison. WATERSHED AND RANGE CONDITIONS ON BIG GAME RIDGE AND VICINITY, TETON NATIONAL FOREST, WYOMING. U. S. Forest Serv., Ogden, Utah. 37 p., 1 map, 30 photos. 1960. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 2 Apr. 1962.] WR 106: 17

Discusses causes of severe erosion and deterioration of vegetation (mostly subalpine with some Pinus flexilis and Abies lasiocarpa) observed at ca. 10,000 ft. alt. in Yellowstone Park. These are thought to be neither fire nor livestock nor pocket gophers, but the grazing and trampling of elks [Cervus canadensis].--Courtesy/ Frank M. Johnson.

Watt, Alex S. (Univ. Cambridge, Cambridge, England.) THE EFFECT OF EXCLUDING RABBITS FROM GRASSLAND A (XEROBROMETUM) IN BRECKLAND, 1936-60. J. Ecol. 50(1): 181-198, 15 figs. Feb. 1962. WR 106: 17

Comparison between ungrazed and intermittently grazed grassland on a shallow, highly calcareous soil is based primarily on numerical data obtained annually from 1936 to 1960. An increase in the number of species was noted on the ungrazed pasture. Rabbit grazing resulted in floristic poverty. Some species are not directly affected by grazing. Palatable species, released from grazing, increase and show a periodicity in numbers related to (a) the periodicity of a series of wet springs and (b) the cyclic behavior of a highly competitive, even-aged population of Hieracium pilosella, itself established seed under similar conditions. For a time it replaces the dominant Festuca ovina, but on its decline, Festuca increases. Equilibrium between Festuca and Hieracium has not been reached before the new entrant Zerna erecta presents, in the continued absence of rabbits, a more likely permanent challenge to Festuca.--From summ.

FORESTLAND--FORESTRY & ECOLOGY

Janzen, D. H. (Bur. Sport Fisheries & Wildl., Washington, D. C.) WILDLIFE AND THE FOREST ENVIRONMENT. J. Forestry 60(1) pt. 1: 6-9. 4 figs. Jan. 1962. WR 106: 17

Although wildlife constitutes a valuable national asset, it must be held within reasonable bounds as a safeguard to maintain adequate population levels to prevent the animals from destroying their habitat as well as other forest and agricultural products. Changes in forest conditions following logging make

conditions highly favorable for wildlife expansion. This situation requires adequate harvest of wildlife to maintain the proper balance. The most serious obstacle is the firm belief held by many sportsmen that any relaxation in present game laws would be likely to result in irreparable reduction in game quantity. Large timber owners are urged to encourage an adequate harvest by the hunter on their lands. Chemicals offer promise of making important contribution toward the solution of the problem of excess numbers of small mammals, either by protecting the trees from animals' attack with repellents, or by controlling the animal involved by use of chemical toxicants. Better cutting methods are being investigated as a means of preventing abnormal buildups of animal pests following timber harvest.

Meyer, Arthur B., editor. [FOREST-WILDLIFE RELATIONSHIPS.] J. Forestry 60 (1) pt. 1: 1-84, illus. Jan. 1962. WR 106: 18

"This issue...has been planned with the objective of presenting at one time the story of values of wildlife, the liabilities created, and reports of research on methods of alleviating harmful effects. The place of wildlife is presented from the viewpoints of industrial foresters and public land management agencies. Also organizations and committees have outlined their programs." Contents: Wildlife and the forest environment, D. H. Janzen; Industrial forestry and wildlife--the Northwest, Edwin F. Heacox and William H. Lawrence; Industrial forestry and wildlife--the South, J. H. Kitchens, Jr.; Industrial forestry and wildlife--the Lake States, E. S. Hurd; Industrial forestry and wildlife--the Northeast, A. L. Bennett; Wildlife and federal lands--the national forests, Lloyd W. Swift; Wildlife and federal lands--the Bureau of Land Management in Western Oregon, W. H. Horning; Wildlife and federal lands--the National Park Service, Coleman C. Newman and S. T. Carlson; Chemical controls as a management measure, Donald A. Spencer; Manipulation of hunting regulations as a management measure, Wendell G. Swank; Planting and fertilization as a possible means of controlling distribution of big game animals, E. Reade Brown and John H. Mandery; Control of the porcupine in New England, Clarence E. Faulkner and Wendell E. Dodge; Controlling bird and mammal damage in direct seeding loblolly pine in East Texas, W. C. Royall, Jr. and E. R. Ferguson; Use of silvicultural techniques for improving deer habitat in the Lake States, Laurits W. Krefting; Pocket gopher control with the burrow-builder in forest nurseries and plantations, A. Lorin Ward and Richard M. Hansen; Action council plan effective in forestry's wildlife problems, Ernest L. Kolbe; 1961 report of The Wildlife Society's committee on economic losses caused by vertebrates, W. E. Howard; The National Research Council's committee on pest control and wildlife relationships, Tom Gill; A look at the future, Daniel L. Leedy. Most of these papers are entered individually in this issue of WR.

Rashkevich, N. A. [ECOLOGY AND AGRICULTURAL SIGNIFICANCE OF BIRDS OF STEPPE FOREST PLANTINGS.] Zool. Zhur. 39(5): 743-754. 1960. [From Biol. Abstr. 37 (4), 1962, from Referat. Zhur., Biol., 1961, no. 10D596.] WR 106: 18

Translation [from Russian]. Original with English summary. Observations were made during 1949-54 in the forest-belts of the eastern regions of the Rostov oblast (Sal'skaya steppe); the results of the analysis of the contents of 630 stomachs and 1893 specimens of regurgitated matter of 21 species of birds are given. Forest-belts which are under 5 years old are settled by the steppe birds which find food there (quail, partridges, rooks, garden and greater warblers, and others). Birds which nest in tree-tops (orioles, lesser grey shrikes, rooks, kites, Falco cherrug, and others) settle in 15 to 20-year-old and older forest-belts. Information is given about the biology of nesting and feeding of 11 species of birds. It is concluded that the beneficial birds of field-protecting forest-belts are the merlin, hoopoe, magpie, black-headed bunting, steppe lark, quail (which are numerous), and common kestrel (which lack importance because of their small numbers). The quail and garden and common buntings have little economic significance. The field sparrow should be exterminated and the number of useful predatory and insectivorous birds should be increased by protecting and attracting them.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Abbott, Herschel G. (Univ. Mass., Amherst.) TREE SEED PREFERENCES OF MICE AND VOLES IN THE NORTHEAST. J. Forestry 60(2): 97-99. Feb. 1962. WR 106: 19

Summary: White-footed mice, boreal red-backed voles, and meadow voles (field mice) were confined in individual cages and fed the seeds of eastern white pine, red pine, eastern hemlock, white spruce, red spruce and balsam fir. Seed preference tendencies of these animals were observed, based upon the number of seeds consumed of each species. The results of these laboratory feedings showed that: 1. All three species of animals rejected the seeds of balsam fir when pine, hemlock, and spruce seeds were made available to them in sufficient quantities to meet their food requirements. 2. Some mice rejected fir seed even when placed under a stress of extreme hunger, while others were inclined to tolerate it as a supplement to a starvation diet. 3. The seeds of both red and white pine were preferred, for the most part, over the smaller seeds of eastern hemlock and white spruce. 4. Boreal red-backed voles, common mammals in the spruce-fir forests of the Northeast, not only rejected balsam fir but readily ate the seeds of red spruce in numbers exceeding those of white pine.

Abbott, Herschel G., and Arthur C. Hart. (NE Forest Expt. Sta. Res. Center, Brewer, Maine.) MICE AND VOLES PREFER SPRUCE SEEDS. Sta. Paper NE Forest Expt. Sta. 153: 1-12, illus. 1960. [From Biol. Abstr. 37(3), 1962.] WR 106: 19

Bennett, A. L. (Armstrong Forest Co., Johnsonburg, Pa.) INDUSTRIAL FORESTRY AND WILDLIFE--THE NORTHEAST. J. Forestry 60(1) pt. 1: 18-20, 2 figs. Jan. 1962. WR 106: 19

Progress made in Pennsylvania during 1956-61 in the "land-people-deer" problem is outlined, including a five point program for deer management. In areas of heavy deer population the damage to timber between successive harvest cuttings may be as high as $23.19 per acre. The impact of timber harvesting on deer habitat is discussed, with emphasis on logging road construction and timber cutting.

Fol, R. [SEARCH FOR AN EQUILIBRIUM BETWEEN FOREST AND GAME AT CHAMBORD.] Rev. Forest. Franc. 12: 815-826. Dec. 1961. [From Bibliog. Agr. 26(6), 1962.] WR 106: 19

In French.

Heacox, Edwin F., and William H. Lawrence. (Weyerhaeuser Co., Tacoma, Wash.) INDUSTRIAL FORESTRY AND WILDLIFE--THE NORTHWEST. J. Forestry 60(1) pt. 1: 10-13, 2 figs. Jan. 1962. WR 106: 19

Data are presented for the average annual loss and nature of damage to growing stock on Weyerhaeuser Company tree farms and expenditures by industrial forest owners for control and prevention of wildlife damage to forest crops. Causes for delays in establishment of new timber crops due to wildlife and accomplishments in the control of damage from forest wildlife by game and nongame species are discussed.

Hurd, E. S. (Consolidated Water Power & Paper Co., Rhinelander, Wis.) INDUSTRIAL FORESTRY AND WILDLIFE--THE LAKE STATES. J. Forestry 60(1) pt. 1: 15-17, 2 figs. Jan. 1962. WR 106: 19

The deer population in the Lake States tends to exceed the carrying capacity of the available range. The causes and effects of this situation are discussed as well as suggested solutions. In recent years the whitetail deer harvest in the Lake States (Mich., Minn., Wis.), varying from a low of 136,925 in 1954 to a high of 327,130 in 1959, has been equal to, if not greater than, any other comparable region in the U. S.

Kitchens, J. H., Jr. (T. L. James & Co., Inc., Ruston, La.) INDUSTRIAL FORESTRY AND WILDLIFE--THE SOUTH. J. Forestry 60(1) pt. 1: 13-15, 2 figs. Jan. 1962. WR 106: 20

Discusses multiple-use planning of the South's industrial forests with reference to the progress made by several large companies. The minimum requirements in forest management for improving game conditions adopted by International Paper Company are presented.

Lay, Dan. DEER FRUIT IN PINE WOODLANDS. Texas Game & Fish 20(1): 8-11, illus. Jan. 1962. WR 106: 20

Quantitative data on spatial relationship, and fruit productivity of several important understory mast producers: dogwood, fringetree, French mulberry, blueberry hawthorn, flatwoods plum, sweetleaf, and Kentucky viburnum.

Little, S., and J. J. Mohr. TESTS OF DEER AND RABBIT REPELLENTS ON PLANTED LOBLOLLY PINES IN EASTERN MARYLAND. Tree Planters' Notes 48: 17-19. Oct. 1961. [From Bibliog. Agr. 26(3), 1962.] WR 106: 20

Royall, W. C., Jr., and E. R. Ferguson. (Bureau Sport Fisheries & Wildl., Mesa, Ariz.) CONTROLLING BIRD AND MAMMAL DAMAGE IN DIRECT SEEDING LOBLOLLY PINE IN EAST TEXAS. J. Forestry 60(1) pt. 1: 37-39. Jan. 1962. WR 106: 20

Summary: South-wide studies indicate that birds represent the most serious obstacle to direct-seeding operations in the cutover longleaf area. In upland pine-hardwood types, rodents and birds together constitute a direct seeding problem. Techniques of field evaluation of predation and seed treatments were greatly improved as the Austin Forest research progressed, but unfavorable weather conditions handicapped the studies. Several bird and rodent repellent combinations were tested and provided satisfactory seed protection; however, foresters must still develop site treatments and sowing rates to assure successful loblolly pine direct-seeding in the variable climate of east Texas.

Schmid, E. DER WILDSCHADEN ALS KRANKHEITSGESCHEHEN. [DAMAGE TO FORESTS BY GAME AS A PATHOLOGICAL SYMPTOM.] Schweiz. Zeitschr. Forstw. 112(8): 481-491. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 20

[In German.] Serious browsing damage by deer and other animals represents a disturbance of the biological balance, which results largely from human intervention. Biocenological investigations should form the basis for preventive and remedial measures.--W. N. Sparhawk.

Simonic, A. [A CONTRIBUTION TO THE PROBLEM OF WILDLIFE DAMAGES IN THE SLOVENIAN FORESTS.] Gozdarski Vest. 20(1/2): 18-31. 1962. [From Bibliog. Agr. 26(6), 1962.] WR 106: 20

In Slovenian.

Spencer, Donald A. (Wildl. Res. Center, USDI, Denver, Colo.) CHEMICAL CONTROLS AS A MANAGEMENT MEASURE. J. Forestry 60(1) pt. 1: 28-30. Jan. 1962. WR 106: 20

Summary: A chemical screening program, combined with field testing under various conditions, offers unusual possibilities of developing chemicals that are specific for the treatment of mammal and bird damage to forest seeds, seedlings, and pole-size timber. With the dramatic developments being made in systemic chemicals, there are great opportunities for building into the seed or seedlings their own self-protection. Hopefully, this will permit selective control of animals injurious to forests and yet provide protection to big game and other wildlife which, like timber, constitute important natural resources.

STRIPPED LAND & MISCELLANEOUS HABITATS

Davis, Grant, and Rex E. Melton. PLANTATIONS ON STRIP-MINE BANKS CAN YIELD TIMBER PRODUCTS. Pa. State Forest School Res. Pap. no. 29. 2 p. 1 May 1962. WR 106: 21

Performances of 11 spp. of trees (25 yr. age class) observed are summarized. Red pine stands should produce poles and possibly some small logs but pitch pine, Banks pine, and table mountain pine are suitable only for pulpwood. Even the poorest plantations protect the banks from erosion and eventually produce some merchantable timber product.

Gysel, Leslie W. (Mich. State Univ., East Lansing.) VEGETATION AND ANIMAL USE OF A POWER LINE RIGHT-OF-WAY IN SOUTHERN MICHIGAN. Mich. Agr. Expt. Sta., Quarterly Bull. 44(4): 697-713, 2 figs. May 1962. WR 106: 21

The species composition and density of plant communities on a mile of power line right-of-way were analyzed and indications of animal use of these communities were noted. Some communities were treated with herbicides to kill trees which would grow into the conductors. The plant species composition and density in the right-of-way were different than that of the adjacent vegetation types. In the sassafras community, 17 species of trees and shrubs and 33 species of herbs were recorded in 1961, 5 years after the chemical treatment. In the hazelnut-hawthorn-oak community, 11 species of trees and shrubs and 17 species of herbs were recorded. All vegetation communities had a variety of dry and fleshy fruits, much browse, and generally dense ground cover during the summer that could be used by wildlife species. Sixteen species of mammals and 19 species of birds were trapped or observed during two summers. Mice and voles were most commonly trapped in the borders of adjacent vegetation types. Chipmunks were most common in the right-of-way. Raccoons and cottontail rabbits were about equal in number in both areas. During the winter white-tail deer and rabbits were in most of the plant communities. Ruffed grouse and pheasants were observed in two communities. All of the various communities of the right-of-way were used by a variety of animal species. Animal use was apparently not directly affected by the herbicide, but by the composition and density of the vegetation in the right-of-way and in the adjacent vegetation types.--From summ.

Richter, W. C. SHRUB SURVIVAL. Pa. Game News 33(3): 62-64, 2 figs. Mar. 1962. WR 106: 21

Various shrubs were planted for wildlife food and cover on relevelled strip-mine spoil. Autumn olive, multiflora rose, and Tartarian honeysuckle showed a high percentage (72%-96%) survival at the end of the first growing season.--Carolyn S. Trapp.

CONTROL OF VEGETATION WITH HERBICIDES ETC.

Brown, James H., Jr., and Calvin B. Dunwoody. (Univ. R. I., Kingston.) AERIAL SPRAYING OF 2,4,5-T FOR RELEASING CONIFERS IN RHODE ISLAND. J. Forestry 59(12): 882-884. Dec. 1961. WR 106: 21

From results obtained in this study, it appears that dosages of 2,4,5-T as low as 0.6 pound a.e. per acre can give satisfactory results, particularly in killing white, black, and scarlet oaks. However, when using 1 pound a.e. per acre diluted in several different quantities of water, results ranged from a high of 90% of all brush to a low of 25%. The 90% results were obtained using 1 pound a.e. in 3 gal. of water per acre.--From summ. & concl.

Chancellor, R. J. EXPERIMENTS ON THE CHEMICAL CONTROL OF EMERGENT WATER PLANTS. Brit. Weed Control Conf. Proc. 5(2): 569-578. 1960. [From Bibliog. Agr. 26(5), 1962.] WR 106: 21

Mainly dalapon.

Chancellor, R. J. RESULTS OF SOME PRELIMINARY EXPERIMENTS ON THE USE OF PELLETED HERBICIDES FOR CONTROLLING SUBMERGED WATER PLANTS. Brit. Weed Control Conf. Proc. 5(2): 559-567. 1960. [From Bibliog. Agr. 26(5), 1962.] WR 106: 21

Frank, P. A., N. E. Otto, and T. R. Bartley. (USDI, Denver, Colo.) TECHNIQUES FOR EVALUATING AQUATIC WEED HERBICIDES. Weeds 9(4): 515-521. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962.] WR 106: 22

A standing-water test and a limited-contact test were used to evaluate herbicides. Seven of the 8 chemicals evaluated showed high activity in the standing-water test at 100 ppm. Only 4 were effective in the limited-contact test. These were acrolein, endothal, diquat and xylene. However, the latter required 600 ppm.--J. van Overbeek.

Gratkowski, H. (Pacific NW Forest & Range Expt. Sta., Portland, Oreg.) BRUSH SEEDLINGS AFTER CONTROLLED BURNING OF BRUSHLANDS IN SOUTHWESTERN OREGON. J. Forestry 59(12): 885-888, 2 figs. Dec. 1961. WR 106: 22

This study was designed to determine whether controlled brush burning stimulates germination of brush seeds in the manzanita-ceanothus-live oak chaparral of the Siskiyou Mountains. Both sprayed and unsprayed brushfields were burned. Large numbers of brush seedlings were found in the burned areas; relatively few in the unburned. Sampling at the first summer after burning showed that the burned areas contained an average of more than 10,000 new brush seedlings per acre. In contrast, only a few seedlings were found in a sprayed brushfield that was not burned and under untreated green brush in the vicinity.--From summ.

Gysel, Leslie W. (Mich. State Univ., East Lansing.) VEGETATION CHANGES AND ANIMAL USE OF A POWER LINE RIGHT-OF-WAY AFTER THE APPLICATION OF AN HERBICIDE. Down to Earth 18(1): 7-10, 4 figs. Summer 1962. WR 106: 22

Summary: The most marked changes in plant density and species composition occurred in communities in which sassafras was a dominant species and where a foliage spray was used. Regrowth of sassafras was common. Only minor changes occurred in plant communities where basal applications of an herbicide were used or where there were no treatments for the control of vegetation. A variety of trees, shrubs and herbs occurred in both sprayed and unsprayed communities. Many kinds of dry and fleshy fruits, much browse and generally dense ground cover were available to wildlife species. Sixteen species of mammals and 19 species of birds were trapped or observed in the right-of-way and borders. Rabbits, deer, grouse, and pheasants utilized the right-of-way during the winter. Animals were in all the plant communities, both treated and untreated with an herbicide.

Harrison, D. S. AQUATIC WEED CONTROL IN PONDS, DITCHES, CANALS AND STREAMS. Fla. Univ. Agr. Ext. Circ. 219. 16 p. Jan. 1962. [From Bibliog. Agr. 26(5), 1962.] WR 106: 22

Krefting, Laurits W. (Bur. Sport Fisheries & Wildl., Univ. Minn., St. Paul.) USE OF SILVICULTURAL TECHNIQUES FOR IMPROVING DEER HABITAT IN THE LAKE STATES. J. Forestry 60(1) pt. 1: 40-42. Jan. 1962. WR 106: 22

An evaluation of the following silvicultural techniques: prescribed burning, disking and bulldozing, planting food and cover, planting openings, use of phytocides, and timber-cutting practices.

Peevy, Fred A. (U. S. Forest Service, Alexandria, La.) EVALUATION OF PLACEMENTS OF 2,4,5-T BASAL SPRAY FOR CONTROL OF BLACKJACK OAK. Weeds 10(1): 74-75. Jan. 1962. WR 106: 22

Five placements were used and the resulting data confirm the need for wetting the root collar and sprouting zone when applying 2,4,5-T as a basal spray to blackjack oak.

Rodgers, E. G., E. O. Burt, and R. P. Upchurch. (Univ. Fla., Gainesville.) REPLACEMENT OF TURKEY OAK VEGETATION WITH LOW-GROWING SOIL COVER. Weeds 10 (1): 48-53. Jan. 1962. WR 106: 22

Among 15 different herbicides tested for eradication of Quercus laevis during a four-year period on Lakeland fine sand in Fla., only monuron, diuron and fenuron at minimal rates of 10 lb/A were effective. Pensacola bahia grass and weeping lovegrass proved to be the best adapted grasses to these deep sandy soils.--From abstr.

Schmutz, Ervin M., and David W. Whitham. (Ariz. Agr. Expt. Sta., Tucson.) SHRUB CONTROL STUDIES IN THE OAK-CHAPARRAL OF ARIZONA. J. Range Mgmt. 15(2): 61-67, 4 figs. Mar. 1962. WR 106: 23

During the three-year period, 1957-9, both airplane- and hand-spray herbicide tests were made on a burned and reseeded oak-chaparral area near Dewey, Ariz. Beginning one year after burning, silvex and 2,4,5-T herbicides were applied to replicated plots at single heavy rates (3 to 5 pounds per acre) and at light rates (1-1.67 pounds per acre) at single-, alternate-, two-consecutive- and three-consecutive-year intervals. It was concluded from these studies that on many burned and reseeded areas of oak-chaparral in Ariz., multiple-light applications of 2,4,5-T or silvex herbicides may provide an economic means of reducing shrub growth and increasing forage production.--From summ.

Yawney, Harry W. (NE Forest Expt. Sta., Upper Darby, Pa.) KILLING CULL TREES WITH AMMATE CRYSTALS--A CASE STUDY. NE Forest Expt. Sta., Forest Res. Notes no. 120. 4 p. 1961. WR 106: 23

Twenty different hardwood species were treated by the ammate-notch method. Black gum, sour wood, service berry, cucumber magnolia, black locust, basswood and sassafras were easy to kill. The red oak and white oak groups, beech, red maple and hickory were intermediate; and black birch, yellow birch and sugar maple were difficult to kill. Costs and percentages of kill figures are tabulated.

MAMMALS--GENERAL

Cronan, John M., and Albert Brooks. (Box 244, Hope Valley, R. I.) THE MAMMALS OF RHODE ISLAND. R. I. Dept. Agr. & Conserv., Div. Fish & Game, Wildl. Pam. no. 6. ix + 133 p., 39 figs. May 1962. WR 106: 23

Although this report is "intended as a non-technical reference" it is the first comprehensive study of R. I. mammals and should be considered as a fine contribution to the literature of R. I. fauna. It is derived from two P-R studies and contains considerable factual material. Included are: a checklist and a key to R. I. mammals, individual species accounts, an index to common names, and an index to scientific names. Accounts are also given of species that have not been recorded from R. I. but that have had a past or present distribution which would indicate that they may have occurred in the past or that they may be recorded in the future.

Essler, W. O., and G. Edgar Folk, Jr. (State Univ. Iowa, Iowa City.) A METHOD OF DETERMINING TRUE RESTING HEART RATES OF UNRESTRAINED MAMMALS BY RADIO TELEMETRY. Animal Behaviour 10(1&2): 168-170, 6 figs. Jan.-Apr. 1962. WR 106: 23

Through the use of the short range, small size, long life EKG transmitter described in this paper, animal heart rates can be measured without the animals becoming aware of the observer or the measuring equipment. The transmitters are surgically implanted in the abdominal cavity. Lower heart rates for dogs and cats have been obtained through radio telemetry than have been obtained through other means--indicating that during the experiments "true resting conditions" have been attained.

Grauwiler, J. BEOBACHTUNGEN AM ELEKTROKARDIOGRAMM VON NICHTDOMESTIZIERTEN SÄUGETIEREN. [ELECTROCARDIOGRAPHY IN WILD ANIMALS.] Schweiz. Arch. Tierheilk. 103: 397-417. 1961. [From Vet. Bull. 32(2), 1962.] WR 106: 23

In German with summaries in English, French, and Italian. [Zoo animals.]

Kaye, Stephen V., and Paul B. Dunaway. (Oak Ridge Natl. Lab., Oak Ridge, Tenn.) BIOACCUMULATION OF RADIOACTIVE ISOTOPES BY HERBIVOROUS SMALL MAMMALS. Health Physics 7: 205-217, 1 fig. 1962. WR 106: 24

Abstract: This paper reports body burdens of radionuclides and dose-rate estimations for wild mammals from areas contaminated by radioactive waste disposal. Body burdens determined by radioassay are compared with body burdens estimated by an equilibrium equation. The data were gathered in a pilot-scale field study and will be used to design a more comprehensive study of large numbers of wild mammals. The more abundant radionuclides included Sr^{90}, Ru^{106}, Cs^{137} and Co^{60}. Almost all of the mammals radioassayed had body burdens that were greater than body burdens expected from world-wide weapons fallout. The estimated whole-body dose rate from internal sources to one muskrat trapped in a settling basin for radioactive liquid waste was 112 rads/week. The estimated whole-body dose rate from internal and external sources to cotton rats trapped on the White Oak Lake bed was 2.9 rads/week. Information from a population ecology study was used with the bioaccumulation data to estimate the quantity of radionuclides held by a cotton-rat population.

Pearson, Oliver P. (Univ. Calif., Berkeley.) SURVIVAL VALUE OF VIBRISSAE. J. Mammal. 43(1): 105-106. Feb. 1962. WR 106: 24

Almost all species of mammals, regardless whether they are nocturnal or diurnal, carnivorous or herbivorous, arboreal or fossorial, have vibrissae. Experiments with 3 groups of Reithrodontomys megalotis and Microtus californicus (unclipped, clipped on one side, and clipped on both sides) indicated that the removal of vibrissae did not change the probability of later recapture. It is concluded "that vibrissae have survival value only at some other time of the year or under other circumstances than those prevailing in the present experiment. It is also possible that vibrissae are of no survival value to the individuals, but that, as with many secondary sex characters, they increase reproductive success and thereby insure their continuance."

Pucek, Zdzisław, and Neli Olszewska. POLISH THERIOLOGICAL BIBLIOGRAPHY. Acta Theriologica 5(20): 301-328. 30 Dec. 1961. WR 106: 24

This is the first of a series of lists on current Polish work in mammalogy. The articles have been published in a large number of periodicals (often of limited circulation) many of which are not normally brought to the attention of biologists outside of Poland. This list represents a selection "of works from those entered on the Polish Theriological Bibliography card index in [the Mammals Res. Inst. of Białowieża]." More than 450 items.

Sealander, John A. (Univ. Ark., Fayetteville.) SEASONAL CHANGES IN BLOOD VALUES OF DEER MICE AND OTHER SMALL MAMMALS. Ecology 43(1): 107-119, 7 figs. Winter 1962. WR 106: 24

Seasonal changes in blood values were observed in both free-living and confined deer mice with significantly higher hemoglobin concentrations occurring during winter and early spring than in summer. These changes are considered to be one aspect of metabolic acclimation to seasonal temperature changes, especially to decreasing temperatures in late autumn and winter.--From summ.

Sutton, Dallas A. (Chico State Coll., Chico, Calif.) A TEMPORARY PRESERVATIVE FOR SMALL MAMMALS. J. Mammal. 43(2): 264-265. May 1962. WR 106: 24

This preservative consisted of 7.5 parts (by volume) of glycerine, 2.5 parts of melted phenol, 5 parts of 100% formaldehyde, with 85 parts of distilled water. The animals remained in the solution various lengths of time ranging from one day to more than three months before they were made up into study skins. No detectable differences in color could be noted, even after several years, between those treated by this temporary preservative and those not put into the preservative.

Syroechkovskii, E. E., and E. V. Rogacheva. [THE SABLE AND WILD UNGULATES OF THE YENISEI REGION OF SIBERIA.] Priroda 3: 102-104. 1961. [From Biol. Abstr. 38(2), 1962, from Referat. Zhur., Biol., 1961, no. 18D443.] WR 106: 25
[In Russian.]

Tarasov, P. P. [THE BIOLOGICAL SIGNIFICANCE OF SCENT GLANDS IN MAMMALS.] Zool. Zhur 39(7): 1062-1068. 1960. [From Biol. Abstr. 37(4), 1962, from Referat. Zhur., Biol., 1961, no. 9D457.] WR 106: 25
Translation [from Russian]. Original with English summary. On the basis of analysis of conditions of existence for specific types and their intra-specific relations it is proved that the scent glands of mammals serve to indicate territorial occupation. This is borne out by the fact that scent glands usually occur in both sexes; also, animals living in families possess scent glands; an increase in the scent gland is not observed before heat; the scent glands are well-developed in the young; the greatest development is seen in stenotopic forms, etc. Significance of scent glands as organs of defense has its place in isolated instances, primarily, in the skunk. Role of the scent glands in the sexual process is secondary.

MAMMALS--FAUNAS AND MANUALS

Burt, William Henry, and Ruben A. Stirton. THE MAMMALS OF EL SALVADOR. Misc. Publ. Museum Zool. Univ. Mich. 117: 1-69, map. 1961. [From Biol. Abstr. 37(2), 1962.] WR 106: 25
The history of collecting in El Salvador is reviewed. Faunal relationships are briefly discussed. A gazeteer is given of the localities where collections were made, at various dates, by R. A. Stirton. Data as to latitude and longitude are given for localities other than those of Stirton. A list is given of 18 ssp. and sspp. of mammals which were first described from El Salvador. The present account deals with 97 spp. now known. Descriptions, with measurements, notes on distribution, and some other remarks are given.

Cabrera, Angel. CATALOGO DE LOS MAMIFEROS DE AMERICA DEL SUR. (METATHERIA - UNGUICULATA - CARNIVORA). [CATALOGUE OF THE MAMMALS OF SOUTH AMERICA. (METATHERIA - UNGUICULATA - CARNIVORA).] Cienc. Zool. 4(1): 1-307. 1957. [From Biol. Abstr. 37(2), 1962.] WR 106: 25
[In Spanish.]

Harper, Francis. LAND AND FRESH-WATER MAMMALS OF THE UNGAVA PENINSULA. Univ. Kans., Museum Nat. Hist., Misc. Publ. no. 27. p. 1-178, 3 figs., 45 maps + 8 pls. 11 Aug. 1961. Paper bound, $2.00 postpaid from Arctic Inst. North America, 1530 P St. NW, Washington 5, D. C. WR 106: 25
In addition to individual accounts of 48 species of mammals found on the Ungava Peninsula, there is an introductory section (p. 9-30) dealing with general topics such as previous investigations, physiography and vegetation, climate, faunal distribution, life zones, French and Montagnais names of mammals, names of plants, conservation, nomenclature, measurements and weights, and color terms. There is also a systematic list of mammalian ectoparasites with host records from the Ungava Peninsula.

Raun, Gerald G. A BIBLIOGRAPHY OF THE RECENT MAMMALS OF TEXAS. Bull. Texas Memorial Museum no. 3. xi + 81 p. Mar. 1962. WR 106: 25
A classified bibliography of about 1500 references pertaining to recent mammals of Texas. Foreign publications are not included.

Soper, J. Dewey. (7115 81st Street, Edmonton, Alberta, Canada.) THE MAMMALS OF MANITOBA. Canadian Field-Naturalist 75(4): 171-219, 30 figs. Oct.-Dec. 1961. WR 106: 25
An annotated list of the 119 species and subspecies of Manitoban mammals.

Soper, J. Dewey. THE MAMMALS OF MANITOBA. Canadian Wildl. Serv., Wildl. Mgmt. Bull., Ser. 1, no. 17. iii + 51 p., 30 figs. [1962.] WR 106: 26
A reprinting, with added index, from Canadian Field-Naturalist 75(4), 1961.

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Andrzejewski, Roman, and Teresa Wierzbowska. (Polish Acad. Sci., Nowy Świat 72, Warsaw.) AN ATTEMPT AT ASSESSING THE DURATION OF RESIDENCE OF SMALL RODENTS IN A DEFINED FOREST AREA AND THE RATE OF INTERCHANGE BETWEEN INDIVIDUALS. Acta Theriologica 5(12): 153-172, 1 fig. 30 Nov. 1961. WR 106: 26
In English with Polish summary.

Huber, James J. (Ohio Coop. Wildl. Res. Unit, Columbus 10.) TRAP RESPONSE OF CONFINED COTTONTAIL POPULATIONS. J. Wildl. Mgmt. 26(2): 177-185. Apr. 1962. WR 106: 26
A study of the factors affecting the trap success of enclosed cottontail rabbit populations. Population density, age and sex composition, movements, breeding cycle and individual variation were the more important population characteristics having significant effects on trapping success. Trap density, length of trapping period, vegetation, location of traps, temperature, rainfall, snow cover, wind, and seasonal changes were the more important physical factors having significant effects on trapping success.

Osterberg, Donald M. (Mich. State Univ., East Lansing.) ACTIVITY OF SMALL MAMMALS AS RECORDED BY A PHOTOGRAPHIC DEVICE. J. Mammal. 43(2): 219-229, 1 fig., 1 pl. May 1962. WR 106: 26
Activity of Mich. small mammals in relation to time of day and various weather conditions was studied by means of an automatic photographic device during Apr., May, Oct., and Nov. in 1960. The photographic records showed that the shorttail shrew, Blarina brevicauda, and the meadow vole, Microtus pennsylvanicus, were the most common mammals in the habitat studied. The records were analyzed statistically with respect to the environmental conditions that were present when each of these species was photographed in the runways. Both species were active in runways chiefly at night, although in autumn the shorttail shrew was more active in daylight than the meadow vole. In general, activity of both species showed poor correlation with changes in such environmental factors as temperature, humidity, barometric pressure and periods of precipitation. Activity, therefore, was influenced principally by an intricate interplay of all factors combined.--From abstr.

Shilova, E. S. [REGIONAL DISTRIBUTION OF THE BURROWS OF SOME CARNIVOROUS MAMMALS AND THEIR RELATIONSHIP TO THE SETTLEMENTS OF THE GREAT GERBIL (RHOMBOMYS).] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(5): 139-140. 1960. [From Biol. Abstr. 38(2), 1962, from Referat. Zhur., Biol., 1961, no. 14D641.] WR 106: 26
Translation [from Russian]. Along the northern shore of the Aral Sea, specifically the Ustyurt Plateau and the northern Kyzyl Kum range, 25 badger, 37 fox (Vulpes vulpes) and 9 korsak (Vulpes corsae) burrows were examined between 1949 and 1959. All badger burrows were found on the shores of the sea or of fresh-water or salt-water lakes. Permanent burrows were most frequently distributed on coastal bluffs in stands of dzhingil. Ten burrows were constructed on settlements of Rhombomys. Fox dens were distributed more uniformly (in valleys and on cliffs, along the shores of the sea or lakes, in sand and in thickets of haloxylon). Twenty of the 27 breeding dens were found on Rhombomys settlements. Five of 9 korsak burrows were situated on Rhombomys settlements. Simultaneous occupancy of the same burrow by carnivores of different spp. was not observed along the northern shore of the Aral Sea. Badger and fox were observed to fill in all the openings to the burrow but one before the winter.

Voisey, Peter W., and W. Kalbfleisch. (Canada Dept. Agr., Ottawa, Ontario.) A MECHANICAL TREADLE FOR THE STUDY OF SMALL ANIMAL TRAFFIC IN THE FIELD OR LABORATORY. J. Mammal. 43(2): 281, 1 fig. May 1962. WR 106: 27

White, Leland D. (Utah State Univ., Logan.) CONCRETE MOLDS OF RODENT BURROWS. J. Mammal. 43(2): 265. May 1962. WR 106: 27
A grout mixture of cement (3 parts cement, 3 parts fine sand, and one part quicklime with water) proved effective in making molds of kangaroo rat burrows to determine their patterns and depths.

MAMMALS--PARASITES AND DISEASES

Clark, L. G., J. I. Kresse, R. R. Marshak, and C. J. Hollister. (Univ. Pa., Kennett Square.) NATURAL OCCURRENCE OF LEPTOSPIRA ICTEROHAEMORRHAGIA IN THE EASTERN GREY FOX AND THE EASTERN RACCOON. Nature 192(4809): 1312-1313. 30 Dec. 1961. WR 106: 27
Found in one gray fox and 2 raccoons during an epizootiological investigation of leptospirosis in Pa. wildlife.

Dubinin, V. B. [VARIATIONS IN THE NUMBERS IN A POPULATION OF PERMANENT ECTOPARASITES OF MAMMALS AND THEIR CAUSES.] Zhur. Obshch. Biol. 11: 91-103. 1950. Twenty-six page CSIRO transl. no. 5478 (1961) available at $2.60 from OTS, U. S. Dept. Commerce, Washington 25, D. C. WR 106: 27
[Translation from Russian.] Abstract from Tech. Transl. 6(11), 1961: A survey of data on the biology of animal's integuments indicates that the dynamics of variations on the number of ectoparasites and the dynamics of their activity depend first of all on the nature and the extent of the changes in the microclimate of the surrounding medium (coverings of the host's body). These conditions are very specific for each species and should appear as an element of the ecological characteristic of a parasite.

Hepworth, W. G., and G. M. Thomas. (Wyo. Game & Fish Res. Lab., Laramie.) ATTEMPTS TO TRANSFER PSOROPTIC MITES FROM ELK TO CATTLE AND SHEEP. J. Am. Vet. Med. Assoc. 140(7): 689-690. 1 Apr. 1962. WR 106: 27
Elk skin scrapings containing a large number of live elk scabies mites were affixed to the hair of 3 calves and the wool of 3 sheep and placed in the ears of 2 calves and 2 sheep. Careful examination 6 and 12 weeks later did not reveal live mites and indicated that the mites had not transferred.--From summ.

Lukashenko, N. P., and V. I. Zorikhina. [THE EPIDEMIOLOGY OF ALVEOCOCCOSIS (ALVEOLAR ECHINOCOCCOSIS) IN THE CENTRAL REGIONS OF THE BARABIN FOREST-STEPPE IN THE NOVOSIBIRSK DISTRICT.] Med. Parazitol. i Parazitar. Bolezni 30(2): 159-168, 250. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962, from Referat. Zhur., Biol., 1961, no. 18E31.] WR 106: 27
Translation [from Russian]. Original with English summary. In the winter and summer periods a total of 3510 mammals belonging to 31 species was investigated. Wild carnivora were a basic and constant source of alveolar echinococcosis infection for the population in the Barabin forest-steppe territory. Transfer of the infection to humans occurs, as a rule, as a result of direct infection from foxes and wolves during the removal of their pelts.--From abstr.

Shura-Bura, B. L., and V. P. Kharlamov. [RADIOAUTOGRAPHY AS A METHOD OF DETECTING TAGGED RODENTS AND THEIR ECTOPARASITES IN A STUDY OF MIGRATION PROBLEMS.] Zool. Zhur. 40(2): 258-263, 2 figs. 1961. Fifteen page transl. available at $1.60 from OTS, U. S. Dept. Commerce, Washington 25, D. C. WR 106: 27
[Translation from Russian.] Abstract in Tech. Transl. 6(11), 1961: Fleas were allowed to feed naturally on white mice that had been injected Sr^{89} subcutaneously at the rate of 4 microcuries per gm of body weight. The isotope Sr^{89} is preserved in the organism of rodents and fleas for an extended time in

quantities that can easily be determined with counting apparatuses, as well as with the aid of radioautography on a photographic film or on a photographic tape that is used in electrocardiography. A photographic film with a sensitivity of 180 units (according to the All-Union State Standard GOST) can be used for radioautographic purposes. The sensitivity of the radioautographic method is higher than the sensitivity of the counter unit "B". The method of macro-radioautography can be utilized under field conditions in a study of rodent migration and of their ectoparasites. For the purpose of tagging gray rats with radioisotope Sr^{89} a dose of the order of 0.25-0.30 microcuries/gm introduced per os is sufficient.

SHREWS, MOLES, BATS

Cope, James B., Edward Churchwell, and Keith Koontz. (Earlham Coll., Richmond, Ind.) A METHOD OF TAGGING BATS WITH RADIOACTIVE GOLD-198 IN HOMING EXPERIMENTS. Proc. Indiana Acad. Sci. 70: 267-269. 1960 [1961]. [From Biol. Abstr. 38(2), 1962.] WR 106: 28

Cope, James B., Keith Koontz, and Edward Churchwell. (Earlham Coll., Richmond, Ind.) NOTES ON HOMING TO TWO SPECIES OF BATS, MYOTIS LUCIFUGUS AND EPTESICUS FUSCUS. Proc. Indiana Acad. Sci. 70: 270-274, illus. 1960 [1961]. [From Biol. Abstr. 38(2), 1962.] WR 106: 28

Homing experiments with summer nursery colonies of Myotis lucifugus and Eptesicus fuscus were conducted. Radioactive gold-198 was used to tag the bats and a portable survey meter was used to locate individual bats in the nursery colonies. From 75-80% of a group of Myotis lucifugus released 20 miles west of their home colony returned between 4 hrs. 55 min. and 6 hrs. later. A total of 10% returned not to the home colony but to a nearby colony. A total of 36 Eptesicus fuscus were taken 250 miles south and released, and 85% of these returned by the 6th night. Only one Eptesicus fuscus of 18 released 250 miles north returned. Other experiments with Eptesicus yielded returns ranging from 31-40% in 2 nights from a distance of 40 miles to 72-100% in 3 nights from a distance of 100 miles. All experiments emphasized the value of radioactive tagging, for in none of the experiments did the number of banded bats collected or seen at the home roost exceed 10%.--Authors.

Enright, John B. (Univ. Calif., Davis.) GEOGRAPHICAL DISTRIBUTION OF BAT RABIES IN THE UNITED STATES, 1953-1960. Am. J. Public Health 52(3): 484-488, 2 figs. Mar. 1962. WR 106: 28

Surveys made through 1954 indicated that bat rabies was found only in Fla., Pa., Texas, Calif., and Mont. By the summer of 1960 bat rabies had been reported from 30 states located in all the geographical and topographical areas of the U. S., except the extreme northeastern section.

Greenhall, Arthur M. CHECK LIST OF THE BATS OF TRINIDAD AND TOBAGO. Caribbean Med. J. 21(1-4): 169-171. 1960. [From J. Mammal. 43(1), 1962.] WR 106: 28

Greenhall, Arthur M. BATS IN AGRICULTURE. Ministry Agr., Trinidad and Tobago. p. 1-20, illus. 1961. [From J. Mammal. 43(1), 1962.] WR 106: 28

Hawkins, A. E., and P. A. Jewell. (Univ. London, London, England.) FOOD CONSUMPTION AND ENERGY REQUIREMENTS OF CAPTIVE BRITISH SHREWS AND THE MOLE. Proc. Zool. Soc. London 138(1): 137-155, 6 figs. Jan. 1962. WR 106: 28

The intake of calories per gram body weight for water shrew, common shrew and Scilly shrew only slightly exceeded that of mice of comparable size: this function was considerably more for the pygmy shrew, and considerably less for the mole [Talpa europaea], as would be expected from consideration of their respective sizes. The results accord with the view that the energy requirement of small insectivores does not differ in any fundamental way from that of small rodents.--From auth. abstr.

Herreid, Clyde Freeman II. TEMPERATURE REGULATION AND OXYGEN CONSUMPTION OF FREE-TAILED BATS IN CAVE HABITATS. Ph.D. thesis, Pa. State Univ. 74 p. 1961. [From Dissertation Abstr. 22(7), 1962.] WR 106: 29

Kay, L. (Univ. Birmingham, England.) A PLAUSIBLE EXPLANATION OF THE BAT'S ECHO-LOCATION ACUITY. Animal Behaviour 10(1&2): 34-41, 8 figs. Jan.-Apr. 1962. WR 106: 29

Summary: The agility of the bat in catching insects on the wing and avoiding obstacles against a background of noise by ultrasonic echo-location is discussed and it is shown that a double-channel pulsed Frequency-Modulation system could account for the high degree of acuity of the animal's echo-location system. Such a system has not so far been tried by man to solve some of his echo-location problems in such as Asdic or Radar, and may well prove to be an aid to blind people.

Malaga Alba, Aurelio. (Ofic. Sanit. Panamer., Mexico, D. F.) LA RABIA DE LOS MURCIELAGOS COMO PROBLEMA VETERINARIO Y DE SALUD PUBLICA TROPICAL. [BAT RABIES AS A VETERINARY PROBLEM AND A TROPICAL PUBLIC HEALTH PROBLEM.] Cienc. Vet. 4(5): 520-531, illus. 1959. [From Biol. Abstr. 37(6, pt. 1), 1962.] WR 106: 29

[In Spanish.] Discovery of the presence of the rabies virus in the United States has led to further studies in which it was revealed that infection is wide spread in Tadarida braziliensis mexicana, a migratory species which extends from Nevada and Kansas to the Isthmus of Tehuantepec in Mexico. In addition, the virus has been isolated from solitary species as well as in those which form colonies. Attempts to destroy the bats in regions where the disease has been epidemic have been costly and ineffective. Measures are now being taken to protect the animals which may become victims of the infection. The author emphasizes the need for more studies of the ecology and biology of the bats, on the nature of the land where they live, the vegetation, the topography, climate etc., and the population density, migratory movements, feeding and reproduction of the bats.--From abstr. by I. K. Langman.

Mystkowska, Ewa Teresa, and Jerzy Sidorowicz. (Polish Acad. Sci., Mammals Res. Inst., Białowieża.) INFLUENCE ON CAPTURES OF MICROMAMMALIA. II. INSECTIVORA. Acta Theriologica 5(18): 263-273. 30 Dec. 1961. WR 106: 29

In English with Polish summary.

Pearson, Erwin W. (Ill. Nat. Hist. Survey, Urbana.) BATS HIBERNATING IN SILICA MINES IN SOUTHERN ILLINOIS. J. Mammal. 43(1): 27-33. Feb. 1962. WR 106: 29

Hibernating bats (356 individuals of 6 species) were observed in 24 of 35 mines searched. Species included: Pipistrellus subflavus, Myotis keenii, M. lucifugus, Eptesicus fuscus, Plecotis rafinesquii, and Lasionycteris noctivagans.

Sulkin, S. Edward. (Univ. Texas, Dallas.) BAT RABIES: EXPERIMENTAL DEMONSTRATION OF THE "RESERVOIRING MECHANISM". Am. J. Public Health 52(3): 489-498, 1 fig. Mar. 1962. WR 106: 29

"Evidence is presented in support of the hypothesis that the brown adipose tissue of the bat stores rabies virus during long periods of latency. Experimental data are offered and the recovery of rabies virus from naturally infected bats lends further support to this thesis."

Swiecimski, Jerzy. STUDIES ON THE MOLE, TALPA EUROPAEA EUROPAEA L. (INSECTIVORA) IN THE POLISH TATRA MTS. Acta Zool. Cracoviensia 5(1): 1-43. 15 Feb. 1960. [From J. Mammal. 43(1), 1962.] WR 106: 29

SHREWS, MOLES, BATS--Continued

Villa R., Bernardo, and E. Lendell Cockrum. (Inst. de Biologia UNAM, Mexico, D.F.) MIGRATION IN THE GUANO BAT TADARIDA BRASILIENSIS MEXICANA (SAUSSURE). J. Mammal. 43(1): 43-64, 2 figs. Feb. 1962. WR 106: 30

Abstract: This paper attempts to marshal all of the evidence available from various sources (including: published observations of fluctuations in population size; field observations in Mexico; field observations in Arizona; banding activities in Mexico; banding activities in Arizona; and banding activities by others), interprets the evidence under the headings of discussion of observations on fluctuations in population size and discussion of results of banding activities and concludes that the guano bat, Tadarida brasiliensis mexicana (Saussure), is seasonally migratory, at least from the northern parts of its range in the southwestern United States and northern Mexico.

Wimsatt, William A. (Cornell Univ., Ithaca, N. Y.) RESPONSES OF CAPTIVE COMMON VAMPIRES TO COLD AND WARM ENVIRONMENTS. J. Mammal. 43(2): 185-191, 1 fig. May 1962. WR 106: 30

Observations suggest that the vampire bat is homeothermic. It raises its heat production by increasing metabolism and muscular activity when exposed to cold. Incidental observations upon vampires in warm environments indicate that the upper critical environmental temperature lies in the range of 27°-30°C.--From abstr.

RABBITS AND PIKAS

Bellig, Robert A. A STUDY OF COTTONTAIL RABBIT POPULATION DYNAMICS IN SOUTHEASTERN VIRGINIA. M.S. thesis, Va. Polytech. Inst. 118 p. 1962. WR 106: 30

Observations were made on the rabbit population at Camp Pickett which had declined drastically the year previous to this study. The population failed to recover. Tularemia was verified from several rabbit specimens found dead. Observations on pellet losses indicated dung beetles were the main sources of loss.--Burd S. McGinnes.

Dinesman, L. G. [THE INFLUENCE OF THE HARE ON DECIDUOUS FOREST RENEWAL IN CENTRAL YAKUTIA.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 64(5): 17-25, 1959. [From Biol. Abstr. 38(2), 1962, from Referat. Zhur., Biol., 1961, no. 9D458.] WR 106: 30

Translation [from Russian]. Original with English summary. Growth rates of trees were studied on test plots of 100 square meters. Damage by hares (Lepus timidus) to the lateral shoots only slightly affects growth. However, damage to top leads to distortion of the trunk, reduces the height of the tree, and checks its growth for several years. In Central Yakutia the gnawing by rabbits of the top shoots occurs on a large scale. One gnawing of a top shoot reduces height by an average of 1/3 and two gnawings reduce height by more than 1/2. In birch trees, each incident of damage to a top shoot reduces the height of the trees by about 1/4. Deciduous trees are subject to damage from 6 to 20 years of age. Within this 14 year period, one or two peaks in the number of hares must occur, since peaks are repeated every 12 years. In birch trees the period of vulnerability to injury is limited to 10 years. Therefore, during this period only one peak in the number of hares might arrive, but it is possible that a significant part of the birch population escapes injury between two periods of massive hare reproduction. In Central Yakutia hares strongly curtail the increase in young plants and make possible the development of stories. Birch trees emerge into the upper story and, after thinning, productive birchgroves are formed. There is a practical interrelation between the early growth of the birch and of those deciduous trees on which the activity of hares has no effect.

Dodds, Donald G. (Dept. Lands & Forests, Kentville, Nova Scotia.) LATE BREEDING IN NEWFOUNDLAND SNOWSHOE HARE. Canadian Field-Nat. 76(1): 60-61. Jan.-Mar. 1962. WR 106: 31

Collection dates, numbers and ages of fetuses, approximate breeding dates, and collection areas of 9 records of abnormally late breeding in Newfoundland hares. Approximate breeding dates range from early Oct. through 18-19 Dec.

Duffield, John W., and Rex P. Eide. (Greeley Forest Nursery, Nisqually, Wash.) APPLICATION OF RABBIT REPELLENT TO CONIFEROUS PLANTING STOCK IN THE PACIFIC NORTHWEST. J. Forestry 60(2): 109-111, 1 fig. Feb. 1962. WR 106: 31

Formulations of repellent spray, equipment, procedure, costs, and effects on nursery soil are given for ZAC (Zinc dimethyl dithiocarbamate cyclohexamine complex) and TMTD (tetramethyl thiuram disulfide).

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) AGE STRUCTURE OF OHIO COTTONTAIL POPULATIONS FROM WEIGHTS OF LENSES. J. Wildl. Mgmt. 26(2): 125-132, 2 figs. Apr. 1962. WR 106: 31

Summary: This paper presents an analysis of the age structure of Ohio cottontail-rabbit populations as indicated by distribution of dry weights of lenses. A total sample of 2,876 lenses was obtained in 38 of Ohio's 88 counties and from 36 of the larger public hunting areas on the opening day of the 1959 upland-game season. Statistical techniques were used to test differences in adult : juvenile ratios and intraclass age structures of both the adult and juvenile classes. The age structures of cottontail populations differed significantly from area to area, particularly those differing in ecology or land use. Higher productivity and a more rapid population turnover were indicated for rabbit populations in the better agricultural areas of the limestone-soils region of western Ohio. Whether this higher productivity is a reflection of density-dependent or of density-independent factors cannot be determined from the available data.

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) RABBIT EYE LENS COLLECTIONS, 1958. Game Res. Ohio 1: 85-86. Apr. 1962. WR 106: 31

Abstract of progress report: During the 1958 upland game hunting season, 167 rabbit eyes were collected at the Delaware Wildlife Area checking stations. Eye lens weights revealed that 33 of the rabbits were from litters of 1957, and 4 from 1956. The adult : juvenile ratio of 1 : 3.5 and the small number of lenses in the lower weight classes indicated poor reproductive success in 1958.

Heisinger, J. F. (Univ. Mo., Columbia.) PERIODICITY OF REINGESTION IN THE COTTONTAIL. Am. Midland Nat. 67(2): 441-448, 2 figs. Apr. 1962. WR 106: 31

Abstract: Sylvilagus floridanus (203 individuals) was collected throughout a year. Reingestion occurred as a well-synchronized diel rhythm, coinciding with the inactive period following sunrise. During summer the reingestion period was shorter than in winter.

Lockley, R. M. (Orielton, Pembrokeshire, England.) SOCIAL STRUCTURE AND STRESS IN THE RABBIT WARREN. J. Animal Ecol. 30(2): 385-423, 14 figs. + 2 pls. Nov. 1961. WR 106: 31

Detailed studies of the behavior of marked individuals of Oryctolagus cuniculus living in two groups of high and low density within 2 separate measured acres of old parkland in Wales were conducted during 1955-8. Subjects treated include: the role of the dominant ♂, the role of the secondary ♂♂, territorial behavior in ♂♂, limits of territory, gregariousness, monogamy, fighting behavior, behavior of young ♂♂, the role of the ♀, order of precedence, enurination and other displacement activities, mating, burrow making, reproduction and development of young, productivity, survival rates, sex ratio, weight records, coccidiosis, myxomatosis, predation and parasites.

McCahan, George R., Max D. Moody, and Frank A. Hayes. (Univ. Ga., Athens.) AN EPIZOOTIC OF TULAREMIA AMONG RABBITS IN NORTHWESTERN SOUTH CAROLINA. Am. J. Hygiene 75(3): 335-338. May 1962. WR 106: 32

Summary: An epizootic among rabbits of northwestern South Carolina was investigated. Fluorescence inhibition procedures were employed, and sufficient evidence was obtained to warrant a diagnosis of tularemia. Recommendations were advanced for preventing an epidemic in human beings.

Sagar, Robert G. (Mount Union Coll., Alliance, Ohio.) FOOD HABIT STUDIES ON COTTONTAIL RABBITS. Game Res. Ohio 1: 133-135. Apr. 1962. WR 106: 32

Abstract of progress report: Identification was made of plants contained in 20 samples of cottontail rabbit fecal pellets at the Woodbury Wildlife Area [Ohio] in 1958 and 1959. All pens were surveyed to determine the relative abundance of plant species available for rabbit food. Plant species occurring in the pens, and those identified in the fecal pellets are listed.

Stevens, Vernon C. (Ohio Coop. Wildl. Res. Unit, Ohio State Univ., Columbus 10.) RABBIT PRODUCTIVITY IN OHIO. Game Res. Ohio 1: 136-138, 1 fig. Apr. 1962. WR 106: 32

Abstract of progress report: In Feb. 1960 a comparative study of cottontail rabbit productivity and reproductive physiology was begun in four physiographic regions of Ohio. Preliminary analysis of data collected from Mar.-June (1) revealed distinct regional differences in female gonad function and the number of surviving embryos, (2) suggested differences in hormone formation between the regions, and (3) showed no regional pattern of embryo mortality.

Wight, Howard M., and Clinton H. Conaway. (Patuxent Wildl. Res. Center, Laurel, Md.) A COMPARISON OF METHODS FOR DETERMINING AGE OF COTTONTAILS. J. Wildl. Mgmt. 26(2): 160-163, 2 figs. Apr. 1962. WR 106: 32

Summary: A comparison of the epiphyseal X-ray and lens-weight aging technique was made of materials obtained in nine collections of cottontails in Mo. A total of 2,307 paws and 2,243 lenses were obtained in the months of Nov. through Jan. in 1959-61. X-ray age estimations showed a progressive decline in the per cent of young from the first to the last of Nov. This suggested that epiphyseal closure was occurring causing error in the X-ray aging technique. This was confirmed when these results were compared with age data obtained from the lens weights of these same animals. Discrepancies in the two methods ranged from 40-48% in Nov. collections, 71-83% in Dec., and 93% in a Jan. collection. It is concluded that the lens-weight age-determination technique is clearly superior to the X-ray technique.

RODENTS--MISCELLANEOUS

Andrzejewski, Roman, and Henryka Wroczawek. (Polish Acad. Sci., Nowy Świat 72, Warsaw.) MASS OCCURRENCE OF APODEMUS AGRARIUS (PALLAS, 1771) AND VARIATIONS IN THE NUMBER OF ASSOCIATED MURIDAE. Acta Theriologica 5(13): 173-184, 4 figs. 15 Nov. 1961. WR 106: 32

In English with Polish summary.

Bendell, James F. (Univ. British Columbia, Vancouver 8.) SOME FACTORS AFFECTING THE HABITAT SELECTION OF THE WHITE-FOOTED MOUSE. Canadian Field-Naturalist 75(4): 244-255, 7 figs. Oct.-Dec. 1961. WR 106: 32

Island studies in eastern Ontario. Mice appeared to: (1) select rock cover and avoid grassform cover, (2) neither select nor avoid the habitats: Conifer, Conifer-Hardwood, Hardwood-Rock, and Hardwood. In a population of predominantly young animals, mature and immature mice apparently selected different habitats than those in which immature mice occurred. In a dense population, mice appeared to fill preferred habitats and cause others to occupy less preferred habitats. Habitat selection did not depend only upon a supply and distribution of food. The effect of density on habitat selection was independent of the supply of food. It seems most likely that

habitat selection was for protective cover for movement and nests. Habitat selection in the white-footed mouse depends upon the kinds of habitat available to mice and the properties of their population. Habitat selection appeared to be for a part of a habitat rather than the whole.--From summ.

Bieri, W. [RECENT DATA ON FIELD MICE AND PLAGUES OF THEM.] Grüne 89(44): 1295-1298. 3 Nov. 1961. [From Bibliog. Agr. 26(3), 1962.] WR 106: 33
In German.

Catlett, Robert H., and Howard S. Shellhammer. (Univ. Calif., Davis.) A COMPARISON OF BEHAVIORAL AND BIOLOGICAL CHARACTERISTICS OF HOUSE MICE AND HARVEST MICE. J. Mammal. 43(2): 133-144, 6 figs. May 1962. WR 106: 33
Abstract: House mice (Mus musculus) and harvest mice (Reithrodontomys megalotis) living in the salt marsh areas of northern Calif. were studied in the field and in the laboratory for a one-year period. The results of 23 trapping periods indicated that house mice were 5.6 times as abundant as harvest mice. Physiological comparisons showed that house mice weighed more, ate and drank more than harvest mice, but had an equal tolerance to water deprivation. Behavioral studies demonstrated that house mice were more active, but both species had similar activity cycles; also both species behaved similarly when caged alone or when both species were caged together. Complete compatibility between species was demonstrated in captivity and there were indications of a cospecies social hierarchy which suggested that in the field a high degree of compatibility existed between species.

Curry-Lindahl, Kai. (Nordiska Museet & Skansen, Stockholm, Sweden.) THE IRRUPTION OF THE NORWAY LEMMING IN SWEDEN DURING 1960. J. Mammal. 43(2): 171-184, 1 fig. May 1962. WR 106: 33
Abstract: The period of 1959-60 was the first "total" lemming year in Sweden in 18 years. This period of high population of the Norwegian lemming (Lemmus lemmus) was characterized by high reproductive rates and possibly breeding through the winter. As population densities increased there was more movement and a spreading out to new habitats. The cause for the moving appeared to be psychological rather than from a lack of food. The population crash did not appear to be associated with either lack of food or predation. It is postulated that the crash was due to a physiological unbalance.

Erkinaro, Eino. (Univ. Helsinki, Finland.) THE SEASONAL CHANGE OF THE ACTIVITY OF MICROTUS AGRESTIS. Oikos 12(1): 157-163. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 33
Reports on the diel activity of Microtus are contradictory. In the present study, specimens of the vole, Microtus agrestis, were placed in glass cages, and automatic records were made of their movements. Two series of experiments were made, extending almost without interruption from Jan. 16th to June 28th, 1956 and continuing later in 1956 and in 1957. The diel activity reversed from winter to summer. In winter the peak of activity was the afternoon and the period of least activity was in the early morning. In summer the peak was early morning and the least activity was in the afternoon. In spring and fall there was a transitional condition, with two peaks of activity each day.--C. C. Davis.

Faulkner, Clarence E., and Wendell E. Dodge. (Bur. Sport Fisheries & Wildl., Boston, Mass.) CONTROL OF THE PORCUPINE IN NEW ENGLAND. J. Forestry 60(1) pt. 1: 36-37. Jan. 1962. WR 106: 33
"In conclusion, porcupine control in New England is best effected during the winter months when the animals congregate in dens; at this time they are vulnerable to lethal controls. Once control is attained, the porcupine will require a relatively long period to reach high numbers again. To date, the sodium arsenite method has given satisfactory protection and is adapted to meet the habits and habitat of the porcupine in this section of the country as illustrated by the results of the Vermont program."

Fenton, Richard H. (NE Forest Expt. Sta., Laurel, Md.) MEADOW MICE PREFER VIRGINIA PINE. J. Forestry 60(4): 258-260, 2 figs. Apr. 1962. WR 106: 34

In checking a 5-year-old plantation of Virginia and loblolly pines it was found that 33% of the Virginia pines were completely girdled as compared with 3% of the loblolly pines; the fate of an additional 22% of the Virginia pines with unhealed partial girdles, remained in doubt. The ratio for all damage combined (60% vs 18%) paralleled early studies on Virginia and pitch pines. Poison baits are recommended as a control measure.

Findley, James S., and Clyde J. Jones. (Univ. N. Mex., Albuquerque.) DISTRIBUTION AND VARIATION OF VOLES OF THE GENUS MICROTUS IN NEW MEXICO AND ADJACENT AREAS. J. Mammal. 43(2): 154-166, 5 figs. May 1962. WR 106: 34

The voles Microtus montanus, M. longicaudus, M. mexicanus, and M. pennsylvanicus occur in N. Mex. and all reach their distributional limits in the general region. The four species differ in degree of ecological and geographic restriction and in amount of geographic variation. Degree of geographic variation seems to be positively correlated with degree of restriction and isolation.--From abstr.

Gambaryan, P. P., S. B. Papanyan, and B. A. Martirosyan. [MATERIALS ON THE ECOLOGY OF THE SOUTHERN GERBIL (MERIONES MERIDIANUS DAHLI SCHIDL.) IN THE ARMENIAN SSR.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(6): 17-22. 1960. [From Biol. Abstr. 37(6, pt. 1), 1962, from Referat. Zhur., Biol., 1961, no. 19D450.] WR 106: 34

Translation [from Russian]. Original with English summary.

Hansen, Richard M. (Colo. State Univ. Expt. Sta., Ft. Collins.) MOVEMENTS AND SURVIVAL OF THOMOMYS TALPOIDES IN A MIMA-MOUND HABITAT. Ecology 43(1): 151-154, 3 figs. Winter 1962. WR 106: 34

In this 1955-9 Colo. study, 180 pocket gophers were captured, banded, and released on a 3.7 acre study area. An unexpected population die-off during winter 1958-9 necessitated termination of project. Only one banded animal is known to have survived the population decline. The average distances between successive captures was greater for young animals than for adults. A high relative rate of survival of adults to young was observed. It was concluded that the strong territorial habits in the pocket gophers in association with the Mima mound microrelief favored adult survival and resulted in comparatively lower survival of young.--From summ.

Hansen, R. M., and E. E. Remmenga. (Colo. State Univ., Fort Collins.) NEAREST NEIGHBOR CONCEPT APPLIED TO POCKET GOPHER POPULATIONS. Ecology 42 (4): 812-814. Autumn 1961. WR 106: 34

"Accurate methods for estimating pocket gopher population density require a great amount of time and effort.... The use of average distances to closest neighbors may be used to show density relationships. However, the accuracy of estimates based on the 'nearest neighbors' in pocket gophers appears to be proportional to the work involved. Under certain circumstances it may be more feasible to obtain density estimates from trapping transects than by trapping plots."

Keith, James O. (Rocky Mountain Forest & Range Expt. Sta., Fort Collins, Colo.) AN EFFICIENT AND ECONOMICAL POCKET GOPHER EXCLOSURE. J. Range Mgmt. 14(6): 332-334, 3 figs. Nov. 1961. WR 106: 34

"Experience indicates that the exclosures described here are efficient and, together with border poisoning, will practically prevent invasion of relatively small areas. The exclosures have also met the objective of permitting normal use by cattle."

Kim, T. A. [MATERIALS ON THE ECOLOGY OF THE TAMARISK GERBIL (MERIONES TAMARISCINUS PALL.) OF THE KYZIL KUM DESERT.] Zool. Zhur. 39(5): 759-765. 1960. [From Biol. Abstr. 37(6, pt. 1), 1962, from Referat. Zhur., Biol., 1961, no. 19D447.] WR 106: 35

Translation [from Russian]. Original with English summary. The material was collected in the western and northern portions of the Kyzil Kum Desert in May to October, 1951, and in April to June, 1952. Tamarisk gerbils are found everywhere in the agricultural zone and penetrate far into the desert along dry river beds. The number of tamarisk gerbils was greater on neglected and fallow fields. In the spring and beginning of summer the tamarisk gerbil feeds on the vegetative parts of plants, and at the end of summer and in fall, on the fruits and seeds. The gerbil reproduces from April through September. It comes in contact with domestic animals and with inhabitants of the desert, and thus may have a substantial epidemiological significance. Data are given on the arrangement of burrows, and the condition of sex organs through the year.

Kinoshita, Eijiro, and Mitsuru Maeda. FIELD EXPERIMENTS ON THE BIOLOGY OF FIELD MICE IN THE WOODLAND. Bull. Govt. Forest Expt. Sta. (Tokyo) 127: 1-98, 2 pls. Jan. 1961. [From J. Mammal. 43(1), 1962.] WR 106: 35

Koshkina, T. V., and A. S. Khalansky. [THE AGE VARIATION IN THE SKULL OF THE NORWEGIAN LEMMING AND THE POPULATION COMPOSITION ANALYSIS IN THIS SPECIES.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 66(2): 3-14. Mar.-Apr. 1961. [From J. Mammal. 43(1), 1962.] WR 106: 35

In Russian with English summary.

Künkel, Hans A. (Univ. Frauenklin. Hamburg-Eppendorf, Germany.) STRAHLENBIOLOGISCHE UNTERSUCHUNGEN AN HIBERNISIERTEN SIEBENSCHLÄFERN. [INVESTIGATIONS OF RADIATION BIOLOGY ON HIBERNATING DORMOUSE.] Chemotherapia 3(3): 200-224, illus. 1961. [From Biol. Abstr. 37(5), 1962.] WR 106: 35

[In German] with English and French summary. A series of experiments is reported in which the effect of radiation on the poikilothermic loir was investigated during hibernation and wakefulness.--From auth. abstr.

Marin, S. N., and E. V. Rotshil'd. [THE ECOLOGICAL AND EPIZOOTIC SIGNIFICANCE OF THE NOCTURNAL ACTIVITY OF THE GREAT GERBIL.] Zool. Zhur. 40(2): 264-268. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962, from Referat. Zhur., Biol., 1961, no. 19D451.] WR 106: 35

Translation [from Russian]. Original with English summary. The number of nocturnally active gerbils changes from year to year and depends on the number of inhabited colonies and the intensity of reproduction. At night the great gerbil is found only from the end of May to the end of July. Young animals account for 92% of the nocturnally active gerbils (the ratio of the sexes being approximately equal). The greater the density of the colonies in the surrounding sections, the greater is the amount of nocturnal activity. The incidence of bubonic plague infection on the epizootic plot was 10.8%, ten times the rate of infection in ordinary population samples. Nocturnally active animals are the most mobile group in the population and provide the most intensive intercolony contact and a wide dissemination of infection.--From abstr.

McNab, Brian Keith. TEMPERATURE REGULATION AND METABOLISM IN SUBSPECIES OF PEROMYSCUS FROM ARID AND MESIC ENVIRONMENTS. Ph.D. thesis, Univ. Wis. 110 p. 1962. [From Dissertation Abstr. 22(9), 1962.] WR 106: 35

Murie, Martin. (Univ. Calif., Berkeley.) METABOLIC CHARACTERISTICS OF MOUNTAIN, DESERT AND COASTAL POPULATIONS OF PEROMYSCUS. Ecology 42(4): 723-740, 6 figs. Autumn 1961. WR 106: 35

Groups of Peromyscus maniculatus and P. eremicus, representing 5 ssp., were trapped in high mountain, lowland, and desert habitats. Measurements of oxygen consumption, deep body temperature, and pelage insulation were made after these

animals had become acclimated to coastal conditions at Berkeley, Calif. The implications of the observed physiological and behavioral differences in relation to geographic distribution are discussed.--From summ.

Patric, Earl F. (Huntington Wildl. Forest, Newcomb, N. Y.) REPRODUCTIVE CHARACTERISTICS OF RED-BACKED MOUSE DURING YEARS OF DIFFERING POPULATION DENSITIES. J. Mammal. 43(2): 200-205, 3 figs. May 1962. WR 106: 36

Abstract: Small mammal populations were sampled over a nine-year period in the Central Adirondack Mountains. Populations varied considerably from year to year, with highs in 1953 and 1959. Clethrionomys was the principal species sampled, and to a large degree accounted for the 1953 and 1959 highs. Evidence of similar population variations is available for Blarina, with a much lower amplitude of fluctuation observed. Low Blarina populations were followed by rapid increases in Clethrionomys. There is some slight evidence that Peromyscus populations reach a peak every three years. At this time it is too early to state whether or not any of the observed variations are cyclic. It was found that Clethrionomys populations reproduced more successfully during periods of low populations than during periods of high populations. Litter size was inversely proportional to population density. In addition, a higher percentage of adult females engaged in reproduction during the periods of low populations.

Sheppe, Walter, Jr. (Bard Coll., Annandale-on-Hudson, N. Y.) SYSTEMATIC AND ECOLOGICAL RELATIONS OF PEROMYSCUS OREAS AND P. MANICULATUS. Proc. Am. Phil. Soc. 105(4): 421-446, illus., map. 1960. [From Biol. Abstr. 37(3), 1962.] WR 106: 36

Peromyscus oreas is largely reproductively isolated from P. maniculatus. It is isolated from maniculatus in part by space, by habitat, by breeding season, and apparently by psychological and physiological-cytological incompatibility. Effectiveness of these isolating mechanisms seems to vary from place to place.--From auth. abstr.

Stumpf, William A., and Carl O. Mohr. (Univ. Calif., Berkeley.) LINEARITY OF HOME RANGES OF CALIFORNIA MICE AND OTHER ANIMALS. J. Wildl. Mgmt. 26(2): 149-154, 5 figs. Apr. 1962. WR 106: 36

Records, with maps, show the observed distribution within home ranges of Microtus californicus and Reithrodontomys megalotis based on live-trapping, marking, releasing and retrapping at 10-foot intervals. Most of the home ranges were decidedly linear; [the average] 90% of the observations of Microtus were within areas 1 unit wide by 2.9 units long; for Reithrodontomys, 1 unit by 2.7. These ranges were compared to data from literature concerning 19 other species (13 mammals, 2 reptiles, and 4 birds). Few of the latter ranges were compact. Territories of 29 Melospiza melodia averaged 1 unit wide by 1.8 units long but some were nearly circular. Those of Colinus virginianus averaged about 1 by 3 units. Reasons for linearity rather than compactness are discussed. Animals living well above ground appear to maintain the most compact territories or ranges. Concentration of activity within a compact area may be detrimental to safety from predators in species living on or near the ground. Poor habitat seems to cause animals to maintain more elongate territories or home ranges than normal.--C. O. Mohr.

Terman, C. Richard. (Taylor Univ., Upland, Ind.) SPATIAL AND HOMING CONSEQUENCES OF THE INTRODUCTION OF ALIENS INTO SEMI-NATURAL POPULATIONS OF PRAIRIE DEERMICE. Ecology 43(2): 216-223, 4 figs. Spring 1962. WR 106: 36

A study of intrinsic mechanisms regulating spatial distribution in local populations of prairie deermice. Mice were released and daily occurrence in nest boxes recorded. Seventeen days after release, mice were isolated in the laboratory for 36 hours. After reintroduction into the home plot the location in nest boxes was recorded. In later experiments young alien mice were retained during the first night after reintroduction of the residents. Each mouse maintained an average of 4.4 nest sites. The mice homed significantly more often than expected by chance, less often to nest boxes occupied by aliens. While aliens were present mice homed to empty nest boxes with

significantly greater frequency than those returning to alien-occupied boxes. The spatial distribution of prairie deermice may be achieved through mutual avoidance of individuals.--From auth. summ.

Vaughan, Terry A. (Colo. State Univ., Ft. Collins.) REPRODUCTION IN THE PLAINS POCKET GOPHER IN COLORADO. J. Mammal. 43(1): 1-13, 4 figs. Feb. 1962. WR 106: 37

Total and monthly sex and age ratios of 1218 Geomys bursarius collected during Sept. 1958 - Dec. 1960. There were 696 ♀♀ (57%) and 522 ♂♂ (43%). The male reproductive cycle and the female reproductive cycle are described. There is only one annual litter per female. Embryos and placental scars averaged 3.40 and 3.46 respectively. Dispersal of young, territoriality, and multiple occupancy are discussed.

Volodin, N. M. [THE BIOLOGY AND ECONOMIC SIGNIFICANCE OF THE GROUND SQUIRREL IN THE VERHOIANSK RAION, IAKUTSK ASSR.] Trudy Nauch.-Issledovatel. Inst. Selskokhoz. Krainevo Severa 1959: 143-153. 1959. [From Biol. Abstr. 37(4), 1962, from Referat. Zhur., Biol., 1961, no. 1D700.] WR 106: 37

Translation [from Russian]. Data (1937-38) are given concerning the spreading, places of habitation, burrows, nutrition, reproduction (number of embryos up to 13, number of cubs in the litter: 6-7 and sometimes 10), settling of the young animals, molting, hibernation (it lasts for 5-1/2 to 6-1/2 months, starting in Nov. when they lie down at -40° to -45° temperature in 25 cm deep snow), and foes. Of the total number of ground squirrels in the Verhoiansk raion (3,400,000, i.e., 8 animals per ha), approximately 100,000 animals yearly are caught. Over 3,000,000 squirrels inhabit the pastures and hay producing areas. More than 45,000 tons/year of grasses are destroyed by them.

Ward, A. Lorin, and Richard M. Hansen. (Bur. Sport Fisheries & Wildl., Denver, Colo.) POCKET GOPHER CONTROL WITH THE BURROW-BUILDER IN FOREST NURSERIES AND PLANTATIONS. J. Forestry 60(1) pt. 1: 42-44, 2 figs. Jan. 1962. WR 106: 37

Further application of equipment described in an earlier paper by the authors [WR 98: 18].

Winkelmann, John R., and Lowell L. Getz. (Univ. Mich., Ann Arbor.) WATER BALANCE IN THE MONGOLIAN GERBIL. J. Mammal. 43(2): 150-154, 2 figs. May 1962. WR 106: 37

Abstract: A study was made of the Mongolian gerbil, Meriones unguiculatus, to determine its water requirements and ability to utilize salt water. When available, free water is consumed (0.039 grams/gram body weight/day) and weight losses occur when the animals are deprived of water; however, after 29 days without water, body weight appeared to stabilize. Concentrations of salt water up through 0.8 molar could be utilized and some water was even obtained from 1.0 molar.

RATTUS AND MUS

Crowcroft, Peter, and John N. R. Jeffers. (British Museum, London, England.) VARIABILITY IN THE BEHAVIOUR OF WILD HOUSE MICE (MUS MUSCULUS L.) TOWARDS LIVE TRAPS. Proc. Zool. Soc. London 137(4): 573-582. Dec. 1961. WR 106: 37

Abstract: Groups of marked wild house mice confined in pens were subjected to repeated live-trapping, to investigate suspected differences in reaction to traps. More males tended to enter traps than females, but the difference between the sexes was not consistently statistically significant. Within each sex, however, some individuals were significantly trap-prone, and some trap-shy. This heterogeneity in response was more pronounced among the females, and there was evidence that it was due to social factors involving the presence of males. The trap-response of descendents of trap-prone and trap-shy mice suggested that inherent differences might also be involved.

Gladkina, T. S. [THE GRAY RAT (RATTUS NORVEGICUS).] Obzor Rasprostraneniia Glavnykh Massov Vreditelei i Bolezni Sel'skokhoz.... 1960: 42-43. 1960. [From Biol. Abstr. 37(3), 1962, from Referat. Zhur., Biol., 1961, no. 6D440.] WR 106: 38

Translation [from Russian]. In 1960 a program of extermination became necessary. Effective results were obtained with Zoocoumarin and Ratindane.

Gladkina, T. S., et al. [MURINE RODENTS.] Obzor Rasprostraneniia Glavnykh Massov Vreditelei i Bolezni Sel'skokhoz.... 1960: 19-39. 1960. [From Biol. Abstr. 37(3), 1962, from Referat. Zhur., Biol., 1961, no. 6D434.] WR 106: 38

Translation [from Russian]. During the last few decades, due to the increase in the level of agrotechnology, the number of murine rodents has decreased. In 1959, they were serious agricultural pests in the Krasnodar and Stavropol districts, the North Osetian, Dagestan, Checheno-Ingush and Kabardino-Balkar ASSR, Armenia, Georgia and elsewhere. The distribution of harmful species of murine rodents in the various republics is reviewed. The type and extent of damage and the density of the rodent population in various agricultural areas are described. According to the predictions for 1960, the effort expended in extermination should be no lower than in 1959. The most harmful activity from murine rodents in the entire USSR can be expected in the northern Caucasus (except for the Rostov oblast) and the Trans-Caucasus.

SCIURIDS

Beale, Donald M. (Mich. State Univ., East Lansing.) GROWTH OF THE EYE LENS IN RELATION TO AGE IN FOX SQUIRRELS. J. Wildl. Mgmt. 26(2): 208-211, 2 figs. Apr. 1962. WR 106: 38

Summary: This study provides evidence that the dry weights of the eye lens can be used to determine age in fox squirrels. Lenses from 301 fox squirrels from southern Michigan were oven-dried at 80°C. for 48 hours and weighed. A growth-rate curve was prepared using the lenses which included those from 12 known-age squirrels. This method of age determination proves to be reliable for separating juveniles (young-of-the-year) from adults. Also, second-litter juveniles (summer born) could be distinguished from first-litter (spring-born) juveniles by the lens weight. Because the growth rate of the lens is most rapid during the first 10 months after birth, age determination is probably most accurate at this time, although adult animals can possibly be separated into yearly age classes up through at least 2.5 years of age.

Bronson, Franklin H. SOME ASPECTS OF SOCIAL PRESSURE IN WOODCHUCKS. Ph.D. thesis, Pa. State Univ. 116 p. 1961. [From abstr. in Dissertation Abstr. 22 (7), 1962.] WR 106: 38

A background study of woodchuck behavior revealed the species to be relatively asocial. Home ranges commonly overlapped, but territorial defense did not occur. Analyses of data obtained from the investigation of neighbor relations revealed that a combination of high density and a high level of aggressiveness resulted in a high interaction rate which, in turn, resulted in suppression of home range sizes of subordinate animals and behavioral suppression of the same animals. Crowded animals in pens showed greater adrenal weights, and lower fat depot and body weights than did isolated or paired woodchucks. Field animals showed still greater adrenal rates and still lower fat and body weights. In tests of the effects of decreased level of social pressure on movements and body weights it was found that there was: (1) less emigration from the experimental population; (2) expansion of home ranges in adult ♂♂ and ♀♀; (3) a lower prevalence of home range shifting, particularly in yearling ♂♂; and (4) an increased rate of weight gain in young animals.

Davis, David E. (Pa. State Univ., University Park.) THE POTENTIAL HARVEST OF WOODCHUCKS. J. Wildl. Mgmt. 26(2): 144-149. Apr. 1962. WR 106: 39

Several years of research provide data for an analysis of the potential harvest of woodchucks. Data for birth and mortality rates, age composition, and numbers were obtained from 1957-60 at Chambersburg, Pa. Information about birth rates and age composition was obtained from two areas. In one many woodchucks were removed in an unsuccessful attempt to reduce the population; in the other only a small number were taken. From these data a set of four hypothetical cases is postulated at different birth and mortality rates. The harvest can be compared under these circumstances: (A) Harvest of adults without compensatory effects on natural mortality; (B) compensation but no harvest of young; (C) compensation and harvest of young; (D) compensation for both adults and young. Under realistic conditions the maximum harvest was obtained from a population of 100 woodchucks with a birth rate of 1.6, probability of survival of adults of 0.57, and of young of 0.27, if harvest replaced all of natural mortality.--Author.

Hannon, J. P., D. A. Vaughan, and R. J. Hock. THE ENDOGINOUS TISSUE RESPIRATION OF THE ARCTIC GROUND SQUIRREL AS AFFECTED BY HIBERNATION AND SEASON. J. Cell. & Comp. Physiol. 57(1): 5-11. Feb. 1961. [From J. Mammal. 43(1), 1962.] WR 106: 39

Kapitonov, V. I. [DISTRIBUTION OF THE BLACKHEADED MARMOT (MARMOTA CAMTSCHATICA PALL.).] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(5): 5-15. 1960. [From Biol. Abstr. 37(6, pt. 1), 1962, from Referat. Zhur., Biol., 1961, no. 19D453.] WR 106: 39

Translation [from Russian]. Original with English summary. Bibliography: 49 titles.

Kapitonov, V. I. [THE ECOLOGY OF MARMOTA CAMTSCHATICA PALL.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(4): 114-115. 1960. [From Biol. Abstr. 37 (3), 1962, from Referat. Zhur., Biol., 1961, no. 11D582.] WR 106: 39

Translation [from Russian]. In work carried out in 1955-57 in the Kharaulakhskie mountains (the lower reaches of the Lena River), the author studied 119 specimens of Marmota camtschatica and 49 of their settlements, and unearthed 1 summer and 10 winter burrows. M. camtschatica lives on the dry, usually southern, slopes of the mountains where there is little snow, most often at a height of 10-50 meters from the foot of the hill. The family home range is 10.50 hectares and includes one winter and 1-2 (up to 5) summer burrows. The winter burrow consists of 1-4 rooms, and the weight of the dry grass used as bedding is 13-25.5 kg. The burrows are connected by footpaths, which the marmots regularly clear. The young are born between the end of May and the beginning of July, 1-2 weeks after the marmots emerge from the nest. Mating probably takes place in the winter burrows 3-4 weeks before the first appearance of the animals. Loss of hair begins soon after emergence from the nest and ends 2-3 weeks before the animals resume hibernation. The rump and tail of adult marmots do not lose their hair each year, which is also true, to one degree or another, in other related species. A list of the parasites found on M. camtschatica is included.

Larson, Joseph S. (Apt. J-10, Draper's Meadow Terrace, Blacksburg, Va.) NOTES ON A RECENT SQUIRREL EMIGRATION IN NEW ENGLAND. J. Mammal. 43(2): 272-273. May 1962. WR 106: 39

Quantitative data on a general north to south emigration of gray squirrels during Sept. 1960 in central and southeastern Mass. and eastern Conn.

Lloyd, H. G. (Ministry Agr., Fisheries & Food, Guildford, Surrey, England.) THE DISTRIBUTION OF SQUIRRELS IN ENGLAND AND WALES, 1959. J. Animal Ecol. 31 (1): 157-165, 4 figs. Feb. 1962. WR 106: 39

A distribution survey of red and gray squirrels in England and Wales from Oct. 1958 to Oct. 1959 showed a continuing decrease in red squirrel distribution and an increase in gray squirrels. Red squirrels are most common in areas not yet colonized by gray squirrels and in areas only recently occupied by them. The rate of spread of gray squirrels is expected to decrease.--From summ.

Moore, Joseph Curtis. (U. S. Natl. Museum, Washington, D. C.) THE SPREAD OF EXISTING DIURNAL SQUIRRELS ACROSS THE BERING AND PANAMANIAN LAND BRIDGES. Am. Museum Novitates no. 2044. p. 1-26, 2 figs. 11 Aug. 1961. WR 106: 40

Nixon, Charles M. (Waterloo Wildl. Expt. Sta., New Marshfield, Ohio.) HARVEST OF GRAY AND FOX SQUIRRELS, 1959. Game Res. Ohio 1: 46-48, 1 fig. Apr. 1962. WR 106: 40

Abstract of progress report: During the 1959 open season, Division of Wildlife Personnel contacted 5,892 hunters in the field. These hunters killed 4,588 squirrels (2,165 fox and 2,423 gray) in 19,374.5 hunting hours, or 11.1 fox squirrels and 12.5 gray squirrels per 100 gun hours. For the first time since 1952, the total gray squirrel kill exceeded the fox squirrel kill in the State. During the first two weeks of the open season, 75% of the total number of contacted squirrel hunters were in the field and killed 74% of the total number of squirrels reported killed. Analysis of hunter bag check data showed that hunter success toward the end of the open season compared favorably with success in the beginning of the season.

Ovsyukova, N. I. [THE INCIDENCE OF OBSERVATIONS OF TRICHINOSIS IN SQUIRRELS ON THE CHUKOTSK PENINSULA.] Med. Parazitol. i Parasitar. Bolezni 30(2): 226. 1961. [From Biol. Abstr. 37(3), 1962, from Referat Zhur., Biol., 1961, no. 17E48.] WR 106: 40

Translation [from Russian]. Post-mortem examination revealed that Trichinella larvae were almost uniform in the skeletal musculature throughout the entire body, showing an average of 35 larvae per 24 sections. The muscles of the diaphragm were more seriously affected, showing 2 to 4 capsules in the field of vision. Sixteen larvae of Trichinella were found in 6 sections of the tongue.

Seymour, William. GREY SQUIRRELS. Quart. J. Forestry 55(4): 293-298. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 40

The introduced grey squirrel is now widespread and very destructive in England, damaging forest trees during June and July. It does not have the same habit in America, and a diet deficiency may be involved. Summer trapping and winter shooting seem to be the best methods of control.--P. B. Dowden.

Venters, H. D., and W. L. Jennings. (Tampa Regional Lab., Public Health Serv., Tampa, Fla.) RABIES IN FLYING SQUIRREL. Public Health Repts. 77(3): 200. Mar. 1962. WR 106: 40

First recorded isolation of rabies from Glaucomys volans [July 1961 -- Pinellas County, Fla.]. "This case was another sporadic appearance of rabies best explained by contact with the insectivorous bat rabies reservoir."

BEAVER

Chesnokov, N. I. [PRESERVING THE TRANSURAL RIVER BEAVER.] Priroda 11: 59-60. 1960. [From Biol. Abstr. 37(4), 1962, from Referat. Zhur., Biol., 1961, no. 13A236.] WR 106: 40

Translation [from Russian]. After the liquidation in 1951 of the Kondo-Sos'va Preserve, the aboriginal west Siberian population of beaver remained without protection. The southern parts of the former preserve established as a beaver preserve will not insure the preservation of these animals. The reservation of rivers of the Konda basin stocked with beaver is necessary: the Ess, Ukh, Nyurukh, Egot'ya. Building railroads across these streams need not be an obstacle to organizing a preserve in this region.

Parovshchikov, V. Y. [FOODS OF BEAVER NEAR ARCHANGEL.] Zool. Zhur., Akad. Nauk SSSR 40(4): 623-624. Apr. 1961. [From J. Mammal. 43(1), 1962.] WR 106: 40

In Russian with English summary.

MUSKRAT AND NUTRIA

Elder, William H., and C. E. Shanks. (Univ. Mo., Columbia.) AGE CHANGES IN TOOTH WEAR AND MORPHOLOGY OF THE BACULUM IN MUSKRATS. J. Mammal. 43(2): 144-150, 1 fig. May 1962. WR 106: 41

Abstract: In the juvenile muskrat 5-8 months of age the distal end or digital processes of the baculum are cartilaginous and the calcification within has only just begun. Ossification centers are 3-6 in number. Calcification is nearly complete in all adult animals. The shaft in adults is heavier and more rugose. These differences provide a new technique for age classification of the harvest. Dimensions such as width and length of the shaft are not reliable criteria of age because considerable overlap is found in large samples. Dentition is not a valid criterion of age in Mo. muskrats.

Harris, Van T., and Fred Webert. (Bur. Sport Fisheries & Wildl., Denver, Colo.) NUTRIA FEEDING ACTIVITY AND ITS EFFECT ON MARSH VEGETATION IN SOUTHWESTERN LOUISIANA. US F&WS Spec. Sci. Rept.--Wildl. no. 64. vii + 53 p., 9 figs. May 1962. WR 106: 41

Abstract: A study of the effect of nutria on marsh vegetation was made in southwestern La. from 1954 to 1956 by means of plant transects, exclosures, and indices to nutria abundance. Plant species studied included saltmeadow cordgrass, Olney's three-square, big cordgrass, reed, and sawgrass. Nutria had a pronounced effect, except for limited areas, only on big cordgrass. It is concluded that nutria did not have a major effect on the marsh vegetation as a whole, and did not create extensive bare areas. It is pointed out that the marsh habitat is dynamic and complex and many factors are undoubtedly involved in the changes that have occurred.

Johansen, Kjell. (Arctic Aeromed. Lab., APO 731, Seattle, Wash.) BUOYANCY AND INSULATION IN THE MUSKRAT. J. Mammal. 43(1): 64-68, 2 figs. Feb. 1962. WR 106: 41

Abstract: The amount of air normally trapped in the nonwettable fur of the muskrat has been measured. The average volume of air for 10 muskrats was 176.9 cc, which represents 21.5% of their average total dry volume. The large volume of air in the fur gives the muskrats an average specific weight of 0.780. The importance of the air layer in the fur for the buoyancy and insulation of the muskrat is discussed.

FUR ANIMALS, GENERAL

Adams, Arthur W. FURBEARERS OF NORTH DAKOTA. N. Dak. Game & Fish Dept. 102 p., 53 numbered figs. + unnumbered line drawings and photos. 1961. WR 106: 41

The economics, management, life history, and trapping techniques of N. Dak. furbearers are described. Other methods of furbearer control and furbearer habitat management are briefly treated.

Bednarik, Karl E. (Magee Marsh Wildl. Area, Oak Harbor, Ohio.) FUR HARVEST IN OHIO, 1958-59. Game Res. Ohio 1: 79-81. Apr. 1962. WR 106: 41

Abstract of progress report: Ohio's most recent fur harvest report, compiled from Ohio fur dealers' reports to the Department of Natural Resources, indicated that the fur market in Ohio, as well as nationally, continued to slump in the 1958-59 fur trapping season.

Fateev, K. Ya. [THE PROBLEM OF THE ACCLIMATIZATION OF FURBEARING ANIMALS IN SOME SECTIONS OF THE USSR.] Zool. Zhur. 39(8): 1236-1238. 1960. [From Biol. Abstr. 37(3), 1962, from Referat. Zhur., Biol., 1961, no. 8D635.] WR 106: 41

Translation [from Russian]. Original with English summary. An analysis is made of acclimatization projects in the Kostroma oblast and the Udmurt ASSR. In 1936, in the Kostroma oblast, Ussuri [River] raccoon-dogs were first released; in 1946, muskrats (Fiber zibethicus L.); in 1958, beavers (Castor fiber). The raccoon dogs are now found in all 28 raions of the oblast (from

1950 to 1958, 14.1 times as many were caught as were released; in 1958, however, due to unlicensed shooting, the size of the take did not increase). The numbers of muskrat have not reached a commercial level, because of fluctuations in the water level in the rivers. The same is true in the Udmurt ASSR, where muskrats were released in 1951. In Udmurtia, in 1947 and 1952, 88 beavers were also released (in 1956, 54 families comprising 216 individuals were counted), and in 1953 raccoon dogs were introduced (by 1956 they had settled 125 km from the release site).

BEARS

Clifford, Donald H., Archie L. Good, and Clarence M. Stowe. (Univ. Minn., St. Paul.) OBSERVATIONS ON THE USE OF ATARACTIC AND NARCOTIC PREANESTHESIA AND PENTOBARBITAL ANESTHESIA IN BEARS. J. Am. Vet. Med. Assoc. 140(2): 464-470, 3 figs. 1 Mar. 1962. WR 106: 42

Summary: 1) Intramuscular injection of large doses of promazine (8.8 mg./kg.) and meperidine (22.0 mg./kg.) were not particularly effective preanesthetic agents in the bear [Euarctos americanus]. 2) Intramuscular injection of morphine was an effective preanesthetic agent in high doses (4.4 and 8.8 mg./kg.) prior to pentobarbital anesthesia. Defecation and vomiting as seen in dogs following the use of morphine were not observed. 3) Promazine (4.4 and 8.8 mg./kg.) was effective in potentiating the actions of morphine. 4) In normal bears, the suggested dose of morphine is 8.8 mg./kg. with 4.4 mg./kg. of promazine. Doses of morphine, 4.4 mg./kg., and promazine, 8.8 mg./kg., were also satisfactory. 5) The above doses of these preanesthetic agents made possible intravenous injection of pentobarbital which, although difficult in bears due to subcutaneous fat, appears to be the safest and most effective route of injection. 6) The above doses of morphine with pentobarbital should be used with caution in the presence of respiratory depression or disease because of their depressant action on respiration.

Rausch, Robert L. NOTES ON THE BLACK BEAR, URSUS AMERICANUS PALLAS, IN ALASKA, WITH PARTICULAR REFERENCE TO DENTITION AND GROWTH. Z. Säugetierk. 26(2): 77-107. May 1961. [From J. Mammal. 43(1), 1962.] WR 106: 42

Ruskov, M. [DISTRIBUTION OF BEARS (URSUS ARCTOS L.) IN BULGARIA.] Sofia. Vissh Lesotekh. Inst. Nauch. Trudove 9: 185-197, map. 1961. [From Bibliog. Agr. 26(5), 1962.] WR 106: 42

In Bulgarian with German summary. In forests, includes damages.

RACCOON, RINGTAIL, COATI

Sanderson, Glen Charles. THE REPRODUCTIVE CYCLE AND RELATED PHENOMENA IN THE RACCOON. Ph.D. thesis, Univ. Ill. 165 p. 1961. [Long abstr. in Dissertation Abstr. 22(10), 1962.] WR 106: 42

MUSTELIDS

Kissen, Abbott T., and John W. Price. (Ohio State Univ., Columbus.) STUDIES ON THE EMBRYOLOGY OF THE MINK. J. Morphol. 110(1): 105-119, 21 figs. on 3 pls. Jan. 1962. WR 106: 42

This paper is believed to be the initial attempt at describing the developmental anatomy of Mustela vison beyond the blastocyst stage.

Sawyer, Thomas K. (Natl. Inst. Health, Bethesda, Md.) THE AMERICAN OTTER, LUTRA CANADENSIS VAGA, AS A HOST FOR TWO SPECIES OF TREMATODES PREVIOUSLY UNREPORTED FROM NORTH AMERICA. Proc. Helminthol. Soc. Wash. 28(2): 175-176. 1961. [From Biol. Abstr. 37(1), 1962.] WR 106: 43

Two trematodes are reported in digestive tract of an otter in Georgia; Baschikirovitrema incrassatum and Enhydridiplostomum alarioides. Revisions of family Diplostomatidae (Strigeida) proposed by Chandler and Rausch (1946) are discussed.--Author.

DOGS, WOLVES, FOXES

Bregadze, I. L., and V. S. Semenov. [THE NOSOGEOGRAPHY OF THE ALVEOLAR FORM OF ECHINOCOCCOSIS IN SIBERIA.] Med. Parazitol. i Parazitar. Bolezni 30 (2): 168-172, 250-251. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962, from Referat. Zhur., Biol., 1961, no. 18E30.] WR 106: 43

Translation [from Russian]. Original with English summary. Foxes play an important role in the spreading of alveolar echinococcosis in Western Siberia. During the 1959 expedition, out of 168 foxes dissected the tapeworm form of alveolar echinococcosis was observed in 89 or 59.2%.--From abstr.

Jolicoeur, Pierre. (Walker Museum, Univ. Chicago, Ill.) MULTIVARIATE GEOGRAPHICAL VARIATION IN THE WOLF CANIS LUPUS L. Evolution 13(3): 283-299. Sept. 1959. WR 106: 43

Pelage and skull variation in 500 wolf specimens was studied by multivariate statistical techniques. The techniques are discussed in some detail. It is concluded that "multivariate statistical techniques are very efficient for evolutionary comparisons with respect to complexes of characters."--V. Schultz.

Le Gros, G. THE DINGO, ITS HABITS AND CONTROL IN CENTRAL WESTERN QUEENSLAND. Queensland Agr. J. 87(6): 386-392, illus. 1961. [From Biol. Abstr. 37(4), 1962.] WR 106: 43

Dingoes are a menace to sheep, lambs, calves, weak cattle, and several wild animals; they kill about once a day never returning to a carcass. Dingoes mate once a year about Apr. or May and give birth 63 days later to a litter of about 5 to 7. They burrow deep in the ground like foxes or nest in caves. Dingoes make well defined paths. The methods of "doggers" employed by syndicates of sheepmen to combat dingoes are described.--From abstr. by T. L. Bissell.

Pavlov, A. N. [ON FEEDING HABITS OF THE FOX IN SPRING AND SUMMER IN PRIMORSK AND ILMEN REGIONS OF NORTHWEST CASPIAN TERRITORY.] Zool. Zhur., Akad. Nauk SSSR 40(4): 624-626. Apr. 1961. [From J. Mammal. 43(1), 1962.] WR 106: 43

In Russian with English summary.

Prokopič, J. (Czechoslovakian Acad. Sci., Prague.) HELMINTOFAUNA DIVOKÝCH A PĚSTOVANYCH LIŠEK V ČESKOSLOVENSKU. [THE HELMINTHOFAUNA OF WILD AND RANCH FOXES IN CZECHOSLOVAKIA.] Zool. Listy 23(3): 239-244, illus. 1960. [From Biol. Abstr. 37(3), 1962.] WR 106: 43

[In Czech] with English summary. Helminthological dissections of 202 foxes (Vulpes vulpes) from natural habitats and 64 reared on a farm were performed in 1956-59. In wild foxes, 11 species of helminths were found. Seven species were biohelminths Taenia hydatigena, T. pisiformis, T. crassiceps, Mesocestoides lineatus, Spirocerca lupi, Rictuallaria affinis, and Crenosoma vulpis. Four species were the geohelminths Toxocara canis, Toxacaris leonina, Uncinaria stenocephala, and Thominx derophilus. In the farm foxes only 2 geohelminths, Toxocara canis and Toxacaris leonina, and one biohelminth, Taenia pisiformis, were found. Each of the species of biohelminths has its own, relatively limited, number of intermediate hosts so that the composition of the helminthofauna of foxes is, to a certain degree, an indication of the prevailing food of the fox. Results obtained indicate that murine rodents, lizards and other reptiles, and terrestrial snails are the predominant food of foxes. This is in agreement with several other recent reports in the literature.

DOGS, WOLVES, FOXES--Continued

Uloth, Walter. ZUR ERNÄHRUNG DES FUCHSES (VULPES)--NUTZEN UND SCHADEN. [ON THE FEEDING HABITS OF FOXES (VULPES)--BENEFICIAL AND HARMFUL.] Säugetierk. Mitteil. 9(3): 127-129. 1 July 1961. [From J. Mammal. 43(2), 1962.] WR 106: 44
[In German.]

CATS

Saunders, Jack Kenneth. THE BIOLOGY OF THE NEWFOUNDLAND LYNX (LYNX CANADENSIS SUBSOLANUS BANGS). Ph.D. thesis, Cornell Univ. 114 p. 1961. [From Dissertation Abstr. 22(9), 1962.] WR 106: 44
Lynx populations fluctuated apparently in response to snowshoe hare abundance during the study period 1957-60. Weight and measurement data indicated that ♂♂ are larger than ♀♀. The development of young from birth to the end of their first year was described and age criteria for distinguishing kittens, yearlings, and adults were proposed. Mating occurred from early Mar. until early Apr. Corpora lutea counts averaged 3.8 and placental scars 3.4. Snowshoe hare, Microtus and big game carrion were the most important foods. Movements of tagged lynx averaged 2.0 miles and extended from 0.0 to 64 miles. Tracked animals traveled from 3 to 7 miles during periods of daily activity. Home ranges determined from tracking studies were 6, 7, and 8 square miles in area with the shape influenced by physical make-up of the habitat. Information on habits was presented.

BIG GAME, GENERAL

Alexandrova, I. V., and L. I. Krasovsky. [ON ELK FEEDING HABITS IN WINTER IN KIROV REGION.] Zool. Zhur. 40(8): 1246-1250. 1961. [From J. Mammal. 43 (2), 1962.] WR 106: 44
In Russian with English summary.

Barnard, P. J., and K. Van der Walt. TRANSLOCATION OF THE BONTEBOK (DAMALISCUS PYGARGUS) FROM BREDASDORP TO SWELLENDAM. Koedoe (Pretoria) 4: 105-109. 1961. [From J. Mammal. 43(2), 1962.] WR 106: 44

Borg, Karl. (State Vet. Med. Inst., Stockholm, Sweden.) PREDATION ON ROE DEER IN SWEDEN. J. Wildl. Mgmt. 26(2): 133-136. Apr. 1962. WR 106: 44
Since 1948 about 1000 roe deer (Capreolus capreolus) found dead in nature in different parts of Sweden have been examined. Of these animals, 156 were killed by such predatory animals as dogs, foxes, lynxes, wolverines, and eagles. Predators have different ways of killing and utilizing a prey animal, and to some extent it has thus proved possible from the injuries in the killed roe deer to state what predator was responsible. The injuries caused by the different predators are described. Of the killed roe deer, 54.5% were diseased. The conclusion is reached that the predation has been a selection of weak animals.--From auth. abstr.

Craig, Vern, and Jim McLucas. MONTANA'S ELK HERDS THROUGH THE YEARS. Mont. Wildl. [1962(1)]: 15-21, illus. Jan. 1962. WR 106: 44
At the beginning of the 20th century, great elk herds had all but vanished in Mont. Restoration was initiated in 1910 and during the next half century 4,671 elk were released. Emphasis has now shifted to management.

Daniel, M. J. (New Zealand Forest Serv., Rotorua.) CONTROL OF INTRODUCED DEER IN NEW ZEALAND. Nature 194(4828): 527-528, 1 fig. 12 May 1962. WR 106: 44
A report of successful poison trials on fallow deer during 1957-59, red deer (1959-60), and Japanese deer (1960-61). Poison bait (1080 on chopped raw carrot) was distributed over test areas by airplane. Kills of 60-90% of fallow deer and about 80% of the red deer and Japanese deer populations were effected on the test areas. Other animals poisoned in the trials included rabbits, hares, and opossums. No native birds were found dead.

Drozdz, Jan. HELMINTOFAUNA ŻUBRA, BISON BONASUS (L.) W POLSCE. [HELMINTHOFAUNA OF THE BISON, BISON BONASUS (L.), IN POLAND. In: CONGRESS OF THE POLISH PARASITOLOGICAL SOCIETY LUBLIN, 19TH-22ND OCT., 1958.] Wiadomości Parazytol. 4(5/6): 717-719. 1958. [From Biol. Abstr. 38(1), 1962.] WR 106: 45

[In Polish.] Abstract.

Drozdz, J. THE EXCHANGE OF PARASITES BETWEEN WILD GAME (CERVIDAE) AND DOMESTIC RUMINANTS. Wiad. Parazytol. 7(suppl. 2): 287-291. 1961. [From Bibliog. Agr. 26(4), 1962.] WR 106: 45

Text in Polish and English.

Druri, S. M. [CHANGES WITH AGE AND SEASON IN THE LIVE WEIGHT OF REINDEER.] Trudy Inst. Morfol. Zhivotnykh Akad. Nauk SSSR 31: 175-183. 1960. [From Biol. Abstr. 37(1), 1962, from Referat. Zhur., 1961, no. 4Zh122.] WR 106: 45

Translation [from Russian]. The average weight of reindeer fawns varied in different years from 5.8 to 7.2 kg, and amounted to 8.5% of the weight of the mother. The first month the weight of the fawns tripled and the second month it doubled. Then the growth rate decreased. During the fall and winter, as the feeding conditions became worse, the milk production of the mothers decreased as did the weight of the suckling young. Reindeer 1 year old weighed as much (50-55 kg) as they did at 3.5 months. In the second and third years the reindeer grew chiefly in the summer; during the winter their weight decreased by 8%. By the time they were 28.5 months old, the males weighed 112.2 kg, the female 93.8 kg.

Gabuzov, O. S. [FEEDING OF FAWNS.] Zool. Zhur. 39(12): 1892-1894. 1960. [From Biol. Abstr. 37(4), 1962, from Referat. Zhur., Biol., 1961, no. 16D569.] WR 106: 45

Translation [from Russian]. Original with English summary. The results of visual tracking of 2 tame Siberian fawns in the spring of 1954 near Moscow. In May and June 7000 nibbled plants of 38 spp. collected. A list is given. After each 1 to 2 hours of feeding the fawns rested.

Hay, Keith G., Gilbert N. Hunter, and Larry Robbins. (Colo. Game & Fish Dept., Denver.) BIG GAME MANAGEMENT IN COLORADO 1949-1958 / A TEN YEAR SURVEY OF APPLIED BIG GAME MANAGEMENT. Colo. Dept. Game & Fish, Tech. Bull. no. 8. 112 p., illus. Dec. 1961. WR 106: 45

This intensive compilation presents a comparative analysis of big game management in Colo. during 1949-58. Resumes of the 1959 and 1960 seasons are also included. It further encompasses the history and natural history of the Centennial state's big game animals. The techniques of management are discussed and explained as well as separate chapters on economics, weather, archery, and land ownership. Additional chapters are devoted to management considerations and comparative data for each of the big game species i.e., deer, elk, antelope, bear, and bighorn sheep. The bulletin was designed not only as a source of information and data for those engaged in the wildlife profession, but also to acquaint the general public with the history, value, purpose, and functions of Colorado's big game management program.--Auth. abstr.

Kirkpatrick, Ralph D., and Lyle K. Sowls. (Okla. State Univ., Stillwater.) AGE DETERMINATION OF THE COLLARED PECCARY BY THE TOOTH-REPLACEMENT PATTERN. J. Wildl. Mgmt. 26(2): 214-217, 1 fig. Apr. 1962. WR 106: 45

Summary: The pattern of tooth eruption and the ages at which the teeth erupted were studied on captive collared peccaries. Variations between individuals were studied and limits to the ages at which teeth erupted were determined. From these data, a field guide for determining the age of animals up to 21.5 months can be constructed. In this manner, animals under 21.5 months of age can be separated into six age categories.

Kratkovskii, N. A. [THE OCCURRENCE OF A FOCUS OF ACARIASIS IN DOMESTICATED REINDEER IN THE TAIMYR IN CONNECTION WITH A CHANGE IN SEASONAL MIGRATION OF WILD REINDEER.] Zool. Zhur. 39(8): 1265-1266. 1960. [From Biol. Abstr. 37 (2), 1962, from Referat. Zhur., Biol., 1961, no. 8Zh349.] WR 106: 46
[In Russian] with English summary.

Lamprey, H. F., J. P. Glasgow, Frances Lee-Jones, and B. Weitz. (Game Dept., Arusha, Tanganyika.) A SIMULTANEOUS CENSUS OF THE POTENTIAL AND ACTUAL FOOD SOURCES OF THE TSETSE FLY GLOSSINA SWYNNERTONI AUSTEN. J. Animal Ecol. 31(1): 151-156. Feb. 1962. WR 106: 46
At Tarangire in the Northern Province of Tanganyika, warthog, rhinoceros and buffalo comprise respectively, in terms of numbers of individuals, 3%, 0.2% and 0.02% of the large mammal population (dik-dik size and above). These same three mammal species provided respectively 77%, 2% and 14% of the food of tsetse fly. Impala, 70% of the mammal population, provided less than 1% of the tsetse fly feeds. It is calculated that each warthog loses on the average 13-27 g of blood per day to the tsetse.--From summ.

Moser, Clifford A. (Colo. Game & Fish Dept., Boulder.) THE BIGHORN SHEEP OF COLORADO. Colo. Dept. Game & Fish, Tech. Publ. no. 10. 49 p., illus. Feb. 1962. WR 106: 46
This booklet is a well-documented treatise on the history, natural history, and management of the Rocky Mountain bighorn sheep in Colo. It contains many facts on the behavior, food habits, breeding, and migration of this animal that have never been published before. The effect of lungworm infestation is discussed in a separate chapter. Other subjects include distribution and abundance, restoration, and hunter harvest.--Keith G. Hay.

Riney, Thane, and Graham Child. (IUCN, Morges prés Lausanne, Switzerland.) BREEDING SEASON AND THE AGEING CRITERIA FOR THE COMMON DUIKER (SYLVICAPRA GRIMMIA). Federal Sci. Congr. 1960: 1-9, 5 figs. 1960. WR 106: 46
Separate of paper presented at 1960 Federal Science Congress. Summary: Based on 1,552 duiker skulls from 14 monthly collections in a Tsetse Control Shooting Area in Southern Rhodesia the order of tooth replacement is described. Each eruption is related to age, the last permanent teeth appearing at about 22 months. This is confirmed with data from a few animals of known age. The monthly changes in the proportion of skulls assigned to each tooth eruption class were used as a means of defining calving periods as well as the age of the eruption of particularly the early age classes. Duiker drop calves in any month, but two peak periods occurred, in mid-summer and mid-winter. Growth is rapid, skulls from the collection and living known-age animals being indistinguishable from fully grown animals at six or seven months of age.

Talbot, Lee M., and Martha H. Talbot. (Univ. Calif., Berkeley 4.) A HOISTING APPARATUS FOR WEIGHING AND LOADING LARGE ANIMALS IN THE FIELD. J. Wildl. Mgmt. 26(2): 217-218, 3 figs. Apr. 1962. WR 106: 46
The construction and operation of hoisting apparatus used in the weighing of more than 300 animals ranging from 35 pound gazelles to 800 pound elands. The apparatus is bolted to the rear of a pickup and through the use of this apparatus a crew of 2 people can handle large animals easily.

DEER (Odocoileus)

Christensen, Earl M. (Brigham Young Univ., Provo, Utah.) CLASSIFICATION OF THE WINTER HABITATS OF THE WHITE-TAILED DEER IN NORTHERN WISCONSIN BASED ON FOREST ORDINATION. Ecology 43(1): 134-135, 1 fig. Winter 1962. WR 106: 46
"Conifer bogs dominated by Larix laricina and Picea mariana are rarely used as winter habitats by deer. The mesic climax forests and upland hardwoods support few deer in the winter. Cedar swamps and swamps dominated by deciduous species, particularly Fraxinus nigra and Acer rubrum, are essentially all inhabited by deer in the winter and commonly these forests have high deer populations. Upland pine forests and aspen forests usually support deer during the winter, but the deer populations may be low."

Cowan, I. McT., A. J. Wood, and H. C. Nordan. (Univ. British Columbia, Vancouver.) STUDIES IN THE TRANQUILIZATION AND IMMOBILIZATION OF DEER (ODOCOILEUS). Canadian J. Comp. Med. & Vet. Sci. 26(3): 57-61. Mar. 1962. WR 106: 47

Abstract: Acepromazine, chlorpromasine, reserpine and succinylcholine have been examined as tranquilizing agents for the deer when administered by the intramuscular route. For the routine sedation of refractile animals to permit experimental manipulation, succinylcholine appears to be the drug of choice. A dose in the range 0.04 to 0.06 mgms per kilo body weight permits sedation of the deer for periods of fifteen to thirty minutes.

Donohoe, Robert W. (Waterloo Wildl. Expt. Sta., New Marshfield, Ohio.) DEER AGE AND SEX RATIOS, 1959. Game Res. Ohio 1: 48-51. Apr. 1962. WR 106: 47

Abstract of progress report: Various sampling methods were used to obtain information on the age and sex ratios of the Ohio deer herd in 1959. The age ratio of fawns : adult does, figured from 177 deer jaws, was 1.39 : 1. Male : female sex ratios of the various samples were: (1) hunter questionnaires, 783 : 684; (2) checking stations, 59 : 45; (3) deer jaws, 92 : 82; (4) field checks, 82 : 89; and (5) accidents, 140 : 142. Chi-square tests showed that none of these sex ratios, except the hunter questionnaire, were significantly different from the expected 1 : 1 ratio.

Fashingbauer, Bernard A. (Minn. Dept. Conserv., St. Paul.) EXPANDING PLASTIC COLLAR AND ALUMINUM COLLAR FOR DEER. J. Wildl. Mgmt. 26(2): 211-213, 3 figs. Apr. 1962. WR 106: 47

To study the behavior patterns of white-tailed deer Odocoileus virginianus, 259 live-trapped animals were ear-tagged and fitted with collars visible at night as well as during the day. An expansible collar made of Boltaron, a rubber base plastic, was devised for ♂♂ to allow for growth and swelling of the neck during the rut. Non-expansible sheet aluminum collars proved satisfactory for females after reaching eight months of age. Light reflective symbols on the collars permit the field identification of individual animals. Collared deer of both sexes have been observed more than 19 months following marking. Collar loss approximates 10% in ♂♂ but is almost nil in ♀♀.--Author.

Forbes, Stanley E. DISEASES AND PARASITES OF THE PENNSYLVANIA WHITE-TAILED DEER. Pa. Game News 32(12): 42-46, illus. Dec. 1961. WR 106: 47

A popular review of the diseases and parasites of deer. Mention is made of the first record of Zenker's degeneration of heart muscle in deer. "The condition involving some calcification, is found in very young calves and sheep and is known as 'white muscle disease'. The cause is unknown but it is known that a vitamin deficiency contributes in part to the condition."

Knoder, C. Eugene, and Robert W. Donohoe. (Ohio Div. Wildl., Columbus 10.) DEER HARVEST ANALYSIS, 1958. Game Res. Ohio 1: 51-60. Apr. 1962. WR 106: 47

Progress report. Contains information on legal kill, crippling rate, hunting pressure, hunter trips, hunter success, hunter movement, distribution and relative density of the deer herd, and sex and age ratios of the deer herd in Ohio during the 1958 hunting season.

Korschgen, Leroy J. (Mo. Conserv. Comm., Columbia.) FOODS OF MISSOURI DEER WITH SOME MANAGEMENT IMPLICATIONS. J. Wildl. Mgmt. 26(2): 164-172, 1 fig. Apr. 1962. WR 106: 47

Analyses of 578 deer stomach samples, collected from 57 of Missouri's 114 counties (1948-60), resulted in 272 identified foods. Twenty food items comprised 1.0% or more each of the total volume. Oak mast, corn, and fruits were the principal, staple deer foods. Use of oak mast was related to availability, and use of agricultural crops amounted to 22.5% of all food during the study period. A relationship between deer use of farm crops and damage complaints was established. Designated plants that may serve as indicators of range

condition are listed. Heavy utilization of red cedar and oak leaves by deer showing symptoms of malnutrition indicated that these items are starvation foods. Heavy utilization of some foods should alert the game manager to necessary herd reduction because of food shortages or over-population.--Author.

Nixon, Charles M. (Waterloo Wildl. Expt. Sta., New Marshfield, Ohio.) LEPTOSPIROSIS IN DEER. Game Res. Ohio 1: 143-144. Apr. 1962. WR 106: 48

Progress report. Four adult female white-tailed deer, presumed to be pregnant, were inoculated with one cc. of live Leptospira pomona. Three does did not demonstrate detectable titers of L. pomona and delivered normal fawns. One doe developed a detectable antibody titer of 1 : 100 and failed to deliver a fawn. Since pregnancy was not determined prior to inoculation, the results are inconclusive as to the effect of leptospira on deer reproduction. The incidence of L. pomona in the native deer population was demonstrated for the second consecutive year, but at a lower level.--From abstr.

Schafer, E. L., Jr., T. J. Grisez, and Ed Sowa. (NE Forest Expt. Sta., Upper Darby, Pa.) RESULTS OF DEER EXCLOSURE STUDIES IN NORTHEASTERN PENNSYLVANIA. NE Forest Expt. Sta., Forest Res. Notes no. 121. 7 p., 4 figs. 1961. WR 106: 48

Studies of Pa. exclosures after 7 growing seasons confirmed other studies elsewhere. Differences between fenced and check plots (browsing effects of deer) were most marked on aspen, sassafras, hawthorn, and the viburnums. Aspen, an important food of beaver, was completely eliminated in one check plot. In 1954 there were 4,600 aspen stems per acre, in 1957 there were 39, and in 1959 there were none.

Verme, Louis J. (Cusino Wildl. Expt. Sta., Shingleton, Mich.) FECUNDITY IN A MICHIGAN WHITE-TAILED DEER. J. Mammal. 43(1): 112-113. Feb. 1962. WR 106: 48

A record of a deer producing twin fawns annually for 10 years. First known litter (twins) occurred during her second year.

MAMMALS--MARINE

Badamshin, B. I. [THE STATUS OF STOCKS OF THE CASPIAN SEAL.] Zool. Zhur. 39(6): 898-905. 1960. [From Biol. Abstr. 37(3), 1962, from Referat. Zhur., Biol., 1961, no. 12D648.] WR 106: 48

Translation [from Russian]. Original with English summary. An analysis of data on changes in the size of commercial takes of the Caspian seal since 1867. During the '30's, there was a marked rise in the take; then a sharp reduction in commercial activity set in. This was due to the development of winter ship and sleigh maneuvers, which upset the age and sex make-up of the seal in the stocks. The practice of capturing the maternal livestock (sexual maturity occurs at 5 years, young are born in the 6th year) and of newborn seals rapidly led to the depletion of the stocks. At present, the numbers of Caspian seals have risen appreciably. This can serve as the basis for an increase in the take.

Bartholomew, George A., and Nicholas E. Collias. (Univ. Calif., Los Angeles.) THE ROLE OF VOCALIZATION IN THE SOCIAL BEHAVIOUR OF THE NORTHERN ELEPHANT SEAL. Animal Behaviour 10(1&2): 7-14, 12 figs. Jan.-Apr. 1962. WR 106: 48

Observation of color-marked individuals on San Nicolas Island, Calif., showed that females of a harem tend to remain in a given spot. Females of low dominance are often forced to move by the aggressive behavior of more dominant females and their pups are likely to become lost and to be bitten by other females. The voice of the pup attracts the mother and stimulates the mother to suckle the pup. Observations in the field combined with spectrographic analysis of tape recordings reveal two main communicational and structural classes of vocalization, attraction calls and threat sounds. Attraction sounds

(mother to pup) are unpulsed, of high and variable pitch, and show clear harmonic structure. Threat sounds (both female and male) have an opposite type of structure; they are highly pulsed, of low and steady pitch, are harsh, and lack clear-cut harmonics. In general, pulse interval in the threat sounds tends to increase with body size. Among males, the resonance and volume of the clap-threat increases with the size and development of the proboscis.--From summ.

Boyd, J. Morton, J. D. Lockie, and H. R. Hewer. (Nature Conservancy, Edinburgh, Scotland.) THE BREEDING COLONY OF GREY SEALS ON NORTH RONA, 1959. Proc. Zool. Soc. London 138(2): 257-277, 5 figs. + 2 pls. Mar. 1962. WR 106: 49

An account based on 6 censuses made in Oct. 1959 on North Rona. The breeding season extends from early Sept. until mid-Nov. Total pups born exceed 2,300. By 16 Oct., mortality on land averages 17%. In addition, those born on the bare rock shelves are almost all lost. Behavior of cows, bulls, and moulters is described. Ratio of bulls to cows is estimated as between 1:10 and 1:13.--From abstr.

Eklund, C. R., and E. L. Atwood. (Polar Branch, U. S. Army Res. Office, Washington, D. C.) A POPULATION STUDY OF ANTARCTIC SEALS. J. Mammal. 43(2): 229-238. May 1962. WR 106: 49

A report on a population study of crabeater, Ross and leopard seals in ice pack areas in 1956-7 based on visual counts from Navy icebreakers. Data were analyzed by application of a test of symmetry and an analysis of covariance. Estimates of January seal populations in Antarctic pack ice are presented. The paper does not discuss the assumptions underlying an analysis of covariance or present a reference to these assumptions or computational procedures. Before blindly following the author's statistical procedures it is strongly recommended that one consult a reliable statistical source such as Snedecor (1956) STATISTICAL METHODS, chapter 13, and Biometrics 13(3), Sept. 1957, (a special issue devoted to the analysis of covariance).--V. Schultz.

Kenyon, Karl W. (US F&WS, Sand Point Naval Air Sta., Seattle 15, Wash.) HISTORY OF THE STELLER SEA LION AT THE PRIBILOF ISLANDS, ALASKA. J. Mammal. 43(1): 68-75, 2 figs., 1 pl. Feb. 1962. WR 106: 49

Adult sea lions in the Pribilofs declined from a level in excess of 15,000 in 1786 to a low of a few hundred in 1914 and under protection have since increased to 5,700-6,700 in 1960. Unregulated exploitation and harassment by man probably played an important role in the reduction of the Pribilof sea lion herd and the shifts in rookery locations. The failure of the Pribilof population to approach its aboriginal size and to reoccupy old breeding grounds during a 40-year period of moderate exploitation is unexplained. Unknown ecological factors are suggested as contributing causes.--From abstr.

Murdaugh, H. V., Jr., J. K. Brennan, W. W. Pyron, and J. W. Wood. (Mt. Desert Island Biol. Lab., Salisbury Cove, Maine.) FUNCTION OF THE INFERIOR VENA CAVA VALVE OF THE HARBOUR SEAL. Nature 194(4829): 700-701, 2 figs. 19 May 1962. WR 106: 49

"It is suggested that the function of the inferior vena cava valve of the seal is to restrict flow of blood from the abdomen to the thorax and prevent pulmonary engorgement with blood when the animal surfaces to breathe. The finding that continuous negative pressure breathing does not alter the rate of urine flow in the seal would agree with this hypothesis."

Rice, Dale W. SEI WHALES WITH RUDIMENTARY BALEEN. Norsk Hvalfangst-Tidende (Norwegian Whaling Gazette) 50(5): 189-193. May 1961. [From J. Mammal. 43(1), 1962.] WR 106: 49

Rice, Dale W. CENSUS OF THE CALIFORNIA GRAY WHALE, 1959/60. Norsk Hvalfangst-Tidende (Norwegian Whaling Gazette) 50(6): 219-225. June 1961. [From J. Mammal. 43(1), 1962.] WR 106: 49

MAMMALS--MARINE--Continued

U. S. Navy. SUBMARINE OR WHALE? Fleet Intelligence Center Pacific (Naval Air Station Navy 128, Box 1275, FPO, San Francisco). 45 p. processed, illus. 31 Aug. 1961. WR 106: 50

This Whale Intelligence Manual will be useful in solving one of our most perplexing problems: that of classification. To help solve the problem of classification, this publication revises CINCPACFLT's "Whale Intelligence" produced in 1952, with the addition of a broad study (complete with photographs) of comparative characteristics between submarines and whales. Individual species of whales (including dolphins and porpoises) are described and illustrated and 12 charts of whale distribution by month in the Pacific Ocean are included. This publication is designed to reduce the number of false submarine sightings in the Pacific Ocean and is useful to personnel of "ships and aircraft, both military and civilian."--From abstr. by Victor B. Scheffer.

MAMMALS--OTHER GROUPS

Evans, L. B., G. E. Wood, V. Flyger, A. D. Alexander, R. H. Yager, and H. L. Rubin. (Walter Reed Army Med. Center, Washington, D. C.) NATURAL OCCURRENCE OF LEPTOSPIRA ICTEROHAEMORRHAGIAE IN AN OPOSSUM. Proc. Soc. Expti. Biol. & Med. 110(1): 113-115. May 1962. WR 106: 50

Summary: Serological and cultural studies for leptospirosis were conducted on 37 opossums trapped at a military reservation at Aberdeen, Md. Five of the 37 animals were serologically positive. Questionable reactions were seen in serums from 9 other animals. Two isolates were obtained and identified as Leptospira ballum and L. icterohaemorrhagiae, respectively. L. icterohaemorrhagiae in an opossum had not heretofore been reported. The antigenic interrelationships among the "complete" and "incomplete" biotypes of L. icterohaemorrhagiae and L. mankarso, disclosed in the serologic studies, differed from previously reported findings.

BIRDS--GENERAL

Phillips, A. R. (c/o Box 1979, Globe, Ariz.) LA ORNITOLOGIA MEXICANA EN LOS ÚLTIMOS CINCUENTA AÑOS. [MEXICAN ORNITHOLOGY DURING THE PAST FIFTY YEARS.] Rev. Soc. Mex. Hist. Nat. 21: 375-389. 1960. [From abstract in Auk 79(2), 1962.] WR 106: 50

In Spanish. The printed bibliography of this review paper is especially useful, and a supplemental mimeographed bibliography is available to serious workers on application to the author.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Andrew, R. J. (Oxford Univ., England.) THE MOTIVATIONAL ORGANISATION CONTROLLING THE MOBBING CALLS OF THE BLACKBIRD (TURDUS MERULA). II. THE QUANTITATIVE ANALYSIS OF CHANGES IN THE MOTIVATION OF CALLING. Behaviour 17 (4): 288-321. 1961. [From Biol. Abstr. 37(1), 1962.] WR 106: 50

Two variables were used for analysis of the changes observed in calling-action potential (A) and the general threshold for calling (T). A is caused to rise both by activity of the neural system controlling flight and by the sight of a frightening object and is reduced by calling. When A is below T no calls occur. T is increased by calling and decays between bouts. When T accumulates slowly the intervals between calls readily decrease until the physical limit is reached, and a scream results.--From auth. abstr.

Bennett, Esther Vorena. ASPECTS OF VOCALIZATION IN THE REDWINGED BLACKBIRD, AGELAIUS PHOENICEUS (LINNAEUS), AS DETERMINED BY AUDIOSPECTROGRAPHIC ANALYSIS. Ph.D. thesis, Cornell Univ. 176 p. 1961. [Long abstr. in Dissertation Abstr. 22(7), 1962.] WR 106: 50

Borror, Donald J. (Ohio State Univ., Columbus.) SONGS OF FINCHES (FRINGILLIDAE) OF EASTERN NORTH AMERICA. Ohio J. Sci. 61(3): 161-174. 1961 [From Biol. Abstr. 37(4), 1962.] WR 106: 51

Christensen, N. Hesselbjerg, and L. Halling Sørensen. EFTERARSTRAEK AF FOVFUGLE I DANMARK. [THE AUTUMN MIGRATION OF RAPTORS IN DENMARK.] Dansk Ornithol. For. Tidsskr. 55(3): 113-136, map. 1961. [From Biol. Abstr. 37(4) 1962.] WR 106: 51

[In Danish] with English summary. In 1957-60 Danish field ornithologists were particularly observing the autumn migration of raptors. Data on these reports and other accidental observations are discussed and compared with the knowledge the Swedish ornithologists have procured concerning these birds in the last decades. Tables are given showing the migration periods of the more common spp., the numbers observed and direction of wind, etc. The direction of the wind is considered to be without influence on the migration urge, but a sidewind drift will often cause dislocations. The birds apparently can compensate for this if flying over landscapes with topographical lines, but not when the landscape is uniform or the birds are over sea areas. Observations are given from South Amager, particularly Kongelund Forest. The birds there represent only a fraction of the migration across the Sound. Many scattered observations of a considerable migration at more northern localities than Amager have been made, although no continuous observations are available. --From auth. summ.

Dexter, Ralph W. (Kent State Univ., Ohio.) FURTHER STUDIES ON NESTING OF THE COMMON NIGHTHAWK. Bird-Banding 32(2): 79-85. 1961. [From Biol. Abstr. 37(3), 1962.] WR 106: 51

Record of nesting on campus of Kent State University is continued with notes on orientation of incubating female to direction of sunlight and wind. One female has nested on campus for 10 years.--Author.

Dexter, Ralph W. (Kent State Univ., Ohio.) LIFE HISTORY OF A TEN-YEAR OLD CHIMNEY SWIFT. Bird-Banding 32(3): 168-171. 1961. [From Biol. Abstr. 37(3), 1962.] WR 106: 51

Details of its life history are described and tabled for 10 consecutive years.--Author.

Gibb, John A. (Dept. Sci. & Indust. Res., Lower Hutt, New Zealand.) ECOLOGY OF THE BIRDS OF KAINGAROA FOREST. Proc. New Zealand Ecol. Soc. 8: 29-38, illus. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 51

Standard observations were made on birds of Kaingaroa Forest in 1958-59, recording their density, frequency of occurrence and feeding habits. Birds' density in breeding season was estimated at about 487 birds per 100 acres in P. radiata, 333 in P. ponderosa, and 240 each in P. nigra and Ps. taxifolia. At other seasons birds' abundance was measured by numbers of each sp. seen or heard per hour in transect counts. Greatest density was again in P. radiata. Five commonest species were, in order, chaffinch, whitehead, grey warbler, blackbird and pied tit. These densities slightly exceed those in Nothofagus forest, but are less than in scrub or low forest on offshore islands and much less than in gardens and regenerating bush.--From auth. abstr.

Graber, Richard R., and Jean W. Graber. (Ill. Nat. Hist. Surv., Urbana.) WEIGHT CHARACTERISTICS OF BIRDS KILLED IN NOCTURNAL MIGRATION. Wilson Bull. 74(1): 74-88, 8 figs. Mar. 1962. WR 106: 51

Gross weights and weights of organs (brain, pectoral mass, heart, lungs, and liver) were collected from 469 specimens (21 species) of nocturnal migrants killed in Sept. 1958, 1959, and 1960 at a TV tower in Ill. Gross weight and weights of certain organs appeared to vary with sex and age. Males tended generally to be heavier than ♀♀, and immatures heavier than adults. This relationship probably reflected fat condition--immatures were usually fatter than adults. Pectoral muscle weight was higher in adults than in immatures and highest in adult ♂♂. Notably poor flyers had relatively small pectoral

muscles. Brain weights, surprisingly, were greater in immatures than in adults, and greater in ♀♀ than in ♂♂. Heart and lung weights tended to vary with gross weight. Liver weights were heavier in immatures than in adults, and tended to be heavier in ♂♂ than in ♀♀.--From summ.

Hamilton, William J. III. (Calif. Acad. Sci., San Francisco 18.) BOBOLINK MIGRATORY PATHWAYS AND THEIR EXPERIMENTAL ANALYSIS UNDER NIGHT SKIES. Auk 79 (2): 208-233, 11 figs. Apr. 1962. WR 106: 52

By observing or recording automatically the facing direction or the restricted locomotion of a bird confined to an experimental apparatus, the orientation of migratory behavior of bobolinks, a transequatorial migrant, was analyzed. A consideration of the course taken by geographically displaced birds suggests that the preferred migration direction depends upon a shifted timing mechanism. Both immature birds, which have never made a migration before, and adults are apparently capable of making directional determinations by some feature of the clear night sky. The directional choice is probably based on the stars and the internal clock. While the stars are obviously important to directional choices at night, other orienting cues such as terrain features and other birds of the same species, and perhaps other species in flight at the same time, may provide additional information upon which the directional course is based.--From auth. summ.

Hilden, Olavi. UEBER DEN BEGINN DES WEGZUGES BEI DEN LIMICOLEN IN FINNLAND. [THE BEGINNING OF MIGRATION BY SHOREBIRDS IN FINLAND.] Ornis Fennica 38(1): 2-31. 1961. [From Biol. Abstr. 37(5), 1962.] WR 106: 52

[In German.] Observations of arrival of 20 spp. were obtained at a garbage dump from 1949-59 and compared with published observations from 4 other places. A comparison of dates of arrival with dates of nesting suggests that migration and nesting are linked together temporally by temperature conditions.--D. E. Davis.

Ivanov, K. P. [BIRDS' ORIENTATION IN SPACE.] Priroda 9: 33-38. 1960. [From Biol. Abstr. 37(4), 1962, from Referat. Zhur., Biol., 1961, no. 10D556.] WR 106: 52

[In Russian.]

Kadochnikov, N. P. [ATTEMPTED MOVEMENT OF THE NESTS OF PARUS MAJOR L. AND PHOENICURUS PHOENICURUS L.] Zool. Zhur. 39(11): 1684-1689. 1960. [From Biol. Abstr. 38(1), 1962, from Referat. Zhur., Biol., 1961, no. 14D615.] WR 106: 52

Translation [from Russian]. Original with English summary. Nests containing fledglings of P. major and P. phoenicurus were moved 5-60 meters from the place of origin and left at the new location 1/2 to 1-1/2 hours. All 15 nests were successfully moved 150-1500 m from their place of origin. In looking for the nests, the birds oriented themselves to a significant degree by the chirping of the fledglings, and rapidly became accustomed to the new locations. Changes in the composition of the food brought to the young P. major were observed when the nests were moved from one type of forest to another.--From abstr.

Kareila, Reima. BEOBACHTUNGEN UBER DEN TAGESRHYTHMUS DER MEHLSCHWALBE, DELICHON URBICA. [OBSERVATIONS ON DAILY RHYTHM OF THE HOUSE MARTIN DELICHON URBICA.] Ornis Fennica 38(2): 65-72. 1961. [From Biol. Abstr. 37(5), 1962.] WR 106: 52

[In German.] Notes on time of roosting in June, July, August (30 observations).--D. E. Davis.

Kilham, Lawrence. (Lyme, N. H.) REPRODUCTIVE BEHAVIOR OF DOWNY WOODPECKERS. Condor 64(2): 126-133, 1 fig. Mar.-Apr. 1962. WR 106: 52

Breeding begins in late March, when ♀♀ take the lead in drumming or tapping to attract mates to nesting sites. Some sexual behavior occurs in fall and on warm winter days, but birds are generally solitary during the winter. Courtship, copulation, and incubation, and behavior of nestlings are described in this article.--Carolyn S. Trapp.

Kuroda, N. AN ESSAY ON BIRD TERRITORIALITY. Misc. Repts. Yamashina's Inst. Ornithol. & Zool. 2(15): 133-137. 1960. [From Auk 79(1), 1962.] WR 106: 53

In English. An attempt to classify types of territoriality according to the relationship between feeding habits (especially abundance of available food) and nesting habits. It is suggested that the "incipient stage" of territoriality is the defense of mobile young in open-ground nesters, as certain waders.--K.C.P.

Kuroda, Nagahisa. THE OVER-SEA CROSSINGS OF LAND BIRDS IN THE WESTERN PACIFIC. Misc. Repts. Yamashina's Inst. Ornithol. & Zool. 3(16): 47-53. 1961. [From Biol. Abstr. 37(5), 1962.] WR 106: 53

Japan lies apart from the continent and many migration routes to and from this archipelago are inevitably sea-crossing. Many stray autumn migrants reach the Bonin and Volcano Islands, possibly aided by oceanic wind drift after crossing 500-600 miles and more may perish on the ocean. They seem to survive winter on islands but summer records are extremely few and spring migration from the south is not evident. This is supported by the fact that actually no passerines reach Marianas, N. Micronesia, though some palaearctic ducks further reach W. Carolines and even Marshall Is. There are some northern migrant species which reach Palau Island, SW. Micronesia, from the Philippines crossing 580 miles of sea, perhaps also aided by winds. Except waders, only a few American ducks could reach the Marshall Island, E. Micronesia, after flying the Pacific Ocean.--Author.

Kuroda, Nagahisa. (Yamashina Museum Birds, Shibuya, Tokyo, Japan.) [THE ROOSTING BEHAVIOUR AND THE INFLUENCING FACTORS IN THE GREY STARLING.] Japanese J. Ecol. 11(1): 26-34, illus. 1961. [From Biol. Abstr. 37(5), 1962.] WR 106: 53

In Japanese with English summary. [See WR 102: 47.]

Lennerstedt, Ingvar. RADARSTUDIER AV FAGELSTRÄCK. [RADAR STUDIES OF BIRD MIGRATION.] Vår Fågelvärld 20(3): 241-246, illus. 1961. [From Biol. Abstr. 38(1), 1962.] WR 106: 53

In Swedish. A review of reports on this subject from various countries.

Martin, J., and G. J. Broekhuysen. SOME RECORD[S] OF BIRDS USING THE NESTS OF OTHERS. Ostrich 32(3): 104-106. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962.] WR 106: 53

Meanley, Brooke. (Patuxent Wildl. Res. Center, Laurel, Md.) FEEDING BEHAVIOR OF THE RED-WINGED BLACKBIRD IN THE DISMAL SWAMP REGION OF VIRGINIA. Wilson Bull. 74(1): 91-93, 1 fig. Mar. 1962. WR 106: 53

Field observations (1957-60) and stomach examinations indicated that the diet consisted of peanuts and corn supplemented by various native food plants. Peanuts were much more important than previous records indicate. Ground feeding was preferred to shock feeding of this legume.

Myhrberg, Harry. GRÖNBENANS (TRINGA GLAREOLA) STRÄCK GENOM EUROPA. (MEDDELANDE NR 31 FRÅN OTTENBY FÅGELSTATION.) [THE MIGRATION OF THE WOOD SANDPIPER (TRINGA GLAREOLA L.) THROUGH EUROPE. (OTTENBY BIRD STATION REPORT NO. 31.).] Vår Fågelvärld 20(2): 115-145, illus., maps. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 53

[In Swedish.] Data are given on the recoveries on which this paper is based. This sp. breeds in the Northern Palearctic region up to the timber line. In the autumn it migrates through Europe to Africa and through Asia to South Asia and eastward to Australia. According to the author's sketch map, the migration passes through Europe in nearly a straight north-south direction. The author believes that those which pass Ottenby are recruited entirely from the most northern parts of Sweden, Norway, and Finland, and possibly also from the Kola Peninsula. Many details are given, with comparison with records from other bird ringing stations.

Nolan, Val, Jr., and David P. Wooldridge. (Indiana Univ., Bloomington.) FOOD HABITS AND FEEDING BEHAVIOR OF THE WHITE-EYED VIREO. Wilson Bull. 74(1): 68-73. Mar. 1962. WR 106: 54

Based on analyses of stomach contents of 67 vireos and on field observations. Lepidoptera formed much the largest element of the animal food, comprising 46% of the total material of 48 stomachs from Apr., May, and June. Beetles ranked second, spiders third, and Hemiptera-Homoptera fourth for these months.

Pielowski, Z. ÜBER DIE VERTIKALVERTEILUNG DER VÖGEL IN EINEM PINETO-QUERCETUM BIOTOP. [THE VERTICAL DISTRIBUTION OF BIRDS IN A PINETO-QUERCETUM BIOTOPE.] Ekologia Polska (Warsaw) 9A(1): 1-23. 1961. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 2 Apr. 1962.] WR 106: 54

In German with Polish summary. Results of a study in the Kampinos national park, near Warsaw, are given in graphs and tables, and discussed.--Courtesy/ Frank M. Johnson.

Pitman, C. R. S. UNUSUAL NESTING BEHAVIOUR OF THE HOUSE SPARROW, PASSER DOMESTICUS (L.). Bull. British Ornithol. Club 81(8): 148-149. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962.] WR 106: 54

A note on a female house sparrow excavating a nest hole at Bournemouth, Hampshire.--B. L. Sage.

Poulson, Thomas L., and George A. Bartholomew. (Univ. Calif., Los Angeles.) SALT BALANCE IN THE SAVANNAH SPARROW. Physiological Zool. 35(2): 109-119, 7 figs. Apr. 1962. WR 106: 54

Two races of savannah sparrow showed differences in their abilities to obtain physiologically useful water from saline solutions. One race, beldingi, is restricted to salt marshes and when given a choice ingested 3.5 times as much salt as the other race, brooksi, which commonly winters in salt marshes but breeds in fresh-water marshes.--From summ.

Prokof'eva, I. V. [THE ROLE OF VARIOUS INVERTEBRATES AND VERTEBRATES IN THE FOOD OF THE NESTLINGS OF CERTAIN FOREST BIRDS.] Doklady Akad. Nauk SSSR (Biol. Sci.) 136(1/6): 182-184, illus. 1961. [From Biol. Abstr. 37(4), 1962, from Doklady Akad. Nauk SSSR 136(2), 1961.] WR 106: 54

Translation [from Russian].

Sargent, Theodore D. (Univ. Wis., Madison 6.) A STUDY OF HOMING IN THE BANK SWALLOW (RIPARIA RIPARIA). Auk 79(2): 234-246, 4 figs. Apr. 1962. WR 106: 54

Homing experiments utilizing color-marked bank swallows were carried out during three summers. Percentage returns decreased with increasing distances. Swallows released at distances under 50 miles from home showed initial homeward takeoff headings, at distances beyond 50 miles showed a random scatter of initial takeoff headings. Birds upon release showed no tendency to fly in any one compass direction. Homing speeds were somewhat greater at shorter distances. Initial headings of the birds with respect to wind direction and preferences for the home direction in relation to the availability of a view of surroundings is also reported.

Selander, Robert K., and Donald J. Nicholson. (Univ. Texas, Austin.) AUTUMNAL BREEDING OF BOAT-TAILED GRACKLES IN FLORIDA. Condor 64(2): 81-91, 1 fig. Mar.-Apr. 1962. WR 106: 54

Autumnal breeding of grackles in Orlando [Fla.] is believed to represent a post-refractory-period response to favorable environmental conditions provided by horticultural practices which maintain the habitat in an essentially uniform condition throughout the year. Like the autumnal breeding of tricolored blackbirds studied in Calif. by Orians, it would appear to be a strongly man-influenced phenomenon. Boat-tailed grackles inhabiting agricultural and prairie land near Orlando and in other parts of the range of the species have only a single, vernal reproductive period. Apparently only adult ♀♀ and ♂♂ are

involved in the autumnal breeding effort. Brood patches of ♀♀ are refeathered following incubation but it is doubtful that a postnuptial molt follows autumnal breeding. Young fledged in the winter have a postjuvenal molt a few weeks after fledging. Fledging success from autumnal nests is very poor, with successful nests producing usually only a single juvenile. Some nests are abandoned in late stages of construction before eggs are laid. A juvenal ♂ that hatched in the fall of 1960 showed behavior indicative of gonadal activity in Mar. 1961. The possibility that response to environmental conditions favorable for reproduction in the fall is more probable and/or is accelerated by social stimulation in highly social, colonial species is considered.--From summ.

Short, Henry L., and Leslie C. Drew. (Mich. State Univ., East Lansing.) OBSERVATIONS CONCERNING BEHAVIOR, FEEDING, AND PELLETS OF SHORT-EARED OWLS. Am. Midland Nat. 67(2): 424-433, 4 figs. Apr. 1962. WR 106: 55

Abstract: A wintering flock of short-eared owls (Asio flammeus) was observed in southern Michigan during March and April 1960. Observations of daily activity, hunting behavior and feeding habits are presented. A statistical analysis of the pellets of short-eared owls is included. This analysis emphasizes the relationship between pellet size and meal size and between pellet size and the skeletal components within the pellet. Suggestions are offered about the interpretation of animal remains found in the pellets of short-eared owls.

Soletskii, G. K. [SOME RESULTS OF THE INVESTIGATION OF THE DROPPINGS OF PREDATORY BIRDS AND THEIR MEANING FOR THE OBJECTIVES OF FAUNISTICS.] Zool. Zhur. 40(1): 84-92. 1961. [From Biol. Abstr. 38(2), 1962, from Referat. Zhur., Biol., 1961, no. 19D425.] WR 106: 55

Translation [from Russian]. Original with English summary. On the basis of incidence of approximately 11,000 bones of small mammals in droppings of the great horn owl, 5 types of feeding of this species were distinguished in various areas of the Gur'yev Oblast. Significance of investigating bird droppings in the study of small vertebrate fauna is pointed out.--From abstr.

Stromberg, Gunnar. UNDERSÖKNING AV NATTSTRÄCKET I ÖSTRA BLEKINGE. [STUDY OF TRANSLUNAR MIGRATION OVER THE PROVINCE OF BLEKINGE, SOUTHERN SWEDEN.] Vår Fågelvärld 20(1): 30-42, illus. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 55

[In Swedish] with English summary. Counting lunar silhouettes of migrating birds was performed some nights during August and September in 1959, using the technique adopted by Lowery. The nocturnal migration was watched from the town of Karlskrona and also from the small peninsula of Torhamns udde, which is the most southeastern corner of the Swedish mainland in Blekinge, about 18 km southeast of Karlskrona. A comparison as to the direction of flight at the 2 observation posts shows some differences. At Torhamn the coastline may have had a guiding effect, and at Karlskrona the strong illumination of the town may have caused a "local disorder in the choice of flight directions." An analysis of the directions observed is presented.--From auth. summ.

Tarasov, M. P. [SOME ECOLOGIC FEATURES OF THE BIRDS OF NORTHWESTERN MONGOLIA.] Zool. Zhur. 39(9): 1398-1402. 1960. [From Biol. Abstr. 37(3), 1962, from Referat. Zhur., Biol., 1961, no. 12D577.] WR 106: 55

Translation [from Russian]. Original with English summary. Data were collected from Apr. to Nov. 1957 in the N.E. Mongolian Altai and adjacent sections of the Gobi desert. In all, 129 species of birds were recorded. Here there is characteristic prevalence of inhabitants of open spaces (steppe and semidesert landscapes predominate); there are only small numbers of nocturnal predators--owls (this is due to the shift of rodents to the diurnal form of life, due to the continental climate with very cold nights). Data are given on counts of predatory birds. The most thickly settled parts are those with outcroppings of rocks and residual mountains, stony slopes, and dry-channel valleys. In less densely settled grassy-wormwood steppes, many of the birds

have adapted to nesting in abandoned burrows of rodents. Owing to the absence of waterside vegetation, swimming birds are often forced to nest far from bodies of water. Vertical migrations of a number of birds are described in relation to the amount of winter snow and drought.

Thorpe, W. H., and D. R. Griffin. (Univ. Cambridge, Cambridge, England.) LACK OF ULTRASONIC COMPONENTS IN THE FLIGHT NOISE OF OWLS. Nature 193(4815): 594-595. 10 Feb. 1962. WR 106: 56

Comparison of 5 spp. of small owls with 2 spp. of hawks and 5 spp. of doves of corresponding size showed that the owls were all silent at ultrasonic ranges, whereas all the hawks and doves were noisy at these levels. Medium-sized owls (3 spp.) tested were also silent, but with large owls such as Bubo the wing beats were silent--except at take-off when ultrasonic noise was occasionally heard.

Thorpe, W. H., and D. R. Griffin. (Univ. Cambridge, Cambridge, England.) ULTRASONIC FREQUENCIES IN BIRD SONG. Nature 193(4815): 595. 10 Feb. 1962. WR 106: 56

"It is concluded that although many small birds undoubtedly have high-frequency components present in their songs and call notes, these are--in the examples studied--always associated with, and are at very much lower amplitude than, the sonic frequencies.... It seems extremely unlikely that the ultrasonic frequencies have any major communicatory function."

Turbott, E. G. (Canterbury Museum, New Zealand.) THE INTERACTION OF NATIVE AND INTRODUCED BIRDS IN NEW ZEALAND. Proc. New Zealand Ecol. Soc. 8: 62-66. 1961. [From Biol. Abstr. 38(2), 1962.] WR 106: 56

Weinzierl, Hubert, and Heinrich Hollenback. UNTERSUCHUNGEN UBER DIE VERLUSQUOTE BEI FREIBRUTERN IN EINEM VOGELSCHUTZGEBIET IM INGOLSTADTER DONAU-AUEWALD. [THE NESTING SUCCESS OF BIRDS IN A BIRD SANCTUARY IN A DANUBIAN MEADOW-WOODS.] Ornithol. Mitteil. 13(7): 121-127. 1961. [From Biol. Abstr. 37(2), 1962.] WR 106: 56

[In German.] In a bird sanctuary the success of about 500 open nests was recorded from 1953-60. The loss varied from 40-80%. The highest loss was Turdus philomelas (80%). The loss for all 26 spp. combined declined from 88% in April to 33% in July.--D. E. Davis.

Weise, Charles M. (Univ. Wis.-Milwaukee, Milwaukee.) MIGRATORY AND GONADAL RESPONSES OF BIRDS ON LONG-CONTINUED SHORT DAY-LENGTHS. Auk 79(2): 161-172, 3 figs. Apr. 1962. WR 106: 56

White-throated sparrows, slate-colored juncos, and fox sparrows were held at a nine-hour photoperiod for up to 18 months to determine migratory responses. Weight and fat, nightly unrest, molt, and gonadal condition were used as the determining factors. The juncos and fox sparrows exhibited a migratory response, retarded by about two months and possibly somewhat suppressed; white-throated sparrows, on the other hand, completely failed to exhibit migratory responses under these conditions. None of the three species came into the full breeding condition while at nine hours. However, birds killed after 8-18 months had gonads advanced beyond the minimum condition.--From summ.

Ytreberg, Nils-Jarle. (Univ. Oslo, Norway.) SOME OBSERVATIONS ON EGG-LAYING IN THE BLACK-HEADED GULL (LARUS RIDIBUNDUS L.) AND THE COMMON GULL (LARUS CANUS L.). Nytt Mag. Zool. (Oslo) 9: 5-15, illus. 1960. [From Biol. Abstr. 38(1), 1962.] WR 106: 56

Presumably 90% of the clutches laid by Larus ridibundus consisted of 3 eggs, and the figure will hardly be much less for L. canus. Eggs may be laid at all times of the day and night, but fewer eggs are laid during the period of darkness. This aspect is significant with L. ridibundus but not with L. canus. There is a tendency for clutches to be started during daylight hours. The common gull takes longer to complete a clutch than the black-headed gull. Clutches started within any one particular 8-hour period do not show any characteristic course differing from the clutches started in another 8-hour period.--From auth. abstr.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Sams, James R., and Ken Stott, Jr. (Nat. Hist. Museum, San Diego, Calif.) BIRDS OF SAN DIEGO COUNTY, CALIFORNIA: AN ANNOTATED CHECKLIST. Occas. Pap. San Diego Soc. Nat. Hist. 10: 1-49. 1959. [From Biol. Abstr. 37(6, pt. 1), 1962.] WR 106: 57

BIRDS--POPULATIONS & FLUCTUATIONS

Boyer, George F., and Otto E. Devitt. (Devitt: Ontario Dept. Lands & Forests, Maple.) A SIGNIFICANT INCREASE IN THE BIRDS OF LUTHER MARSH, ONTARIO, FOLLOWING FRESH-WATER IMPOUNDMENT. Canadian Field-Naturalist 75(4): 225-237, 1 fig. Oct.-Dec. 1961. WR 106: 57

An annotated list of the breeding birds based on field observations made during 1952-9. A description of habitats, and birds associated with each type, has been given. The estimates of waterfowl populations are indicative of the importance of the marsh both as a duck production center and as a resting place for migratory waterfowl. A management plan for the marsh is suggested.--From summ.

Mayfield, Harold. (River Road, RFD, Waterville, Ohio.) 1961 DECENNIAL CENSUS OF THE KIRTLAND'S WARBLER. Auk 79(2): 173-182, 1 fig. Apr. 1962. WR 106: 57

Results of a 1961 census of the Kirtland's warbler are compared to a 1951 count, indicating an encouraging increase in numbers. Habitat, song, population trend and density are discussed, as well as methods and accuracy of the census.

[Netherlands: Arch. Néerl. Zool.] THE DYNAMICS OF INSECT AND BIRD POPULATIONS IN PINE WOODS. Arch. Néerl. Zool. (Leiden) 13(3): 265-472, illus. 1960. [From Commonwealth Forestry Bur., Centralized Title Serv. Cards, 2 Apr. 1962.] WR 106: 57

Courtesy/ Frank M. Johnson.

Shields, Tom E. (Maysville Heights, RR # 7, Zanesville, Ohio.) CHANGES IN THE BREEDING BIRDS OF MUSKINGUM COUNTY, OHIO BETWEEN 1937 AND 1960. Redstart 29(1): 2-10. Jan. 1962. WR 106: 57

A comparison of bird lists made for the period 1934-7 and the period 1957-60. In 1957-60 there were more surface-feeding ducks, flycatchers, starlings, vireos, wood warblers and weaver finches, and fewer hawks, gamebirds, shorebirds, woodpeckers, swallows, grosbeaks, finches, sparrows and buntings.

BIRDS--ECONOMICS, CONTROL, MORTALITY

Berger, Daniel D., and Frances Hamerstrom. (Cedar Grove Ornithol. Sta., Cedar Grove, Wis.) PROTECTING A TRAPPING STATION FROM RAPTOR PREDATION. J. Wildl. Mgmt. 26(2): 203-206, 4 figs. Apr. 1962. WR 106: 57

A description of the modern version of the bal-chatri--an old Indian hawk trap--and of its' construction, and use. Techniques for trapping from cars and selection of trap sites are explained, as are the use, and care, and relative merits of the bait animals. With this type of bal-chatri, 310 raptors of 15 species were caught during 1959 through the spring of 1961. Unlike pole trapped birds which are usually mutilated or killed, 99.35% of these birds were released in excellent condition.--D. D. Berger.

Bull, P. C., and B. W. Boeson. PRELIMINARY ANALYSIS OF RECORDS OF "STORM-KILLED" SEA BIRDS FROM NEW ZEALAND, 1939-59. Notornis 9(6): 185-199. 1961. [From Biol. Abstr. 37(6, pt. 1), 1962.] WR 106: 57

Published and unpublished records held by the Ornithological Society of New Zealand give the identity and the date and place of collection of 6,960 specimens of oceanic birds that have been found dead on New Zealand beaches during the period 1939 to 1959. Of the 50 spp. represented, 38 belong to the

order Procellariiformes. Prions (Pachyptila spp.) constitute 64% of the local records and shearwaters (Puffinus spp.) 20%. The records of most of the spp., particularly of the prions, are characterized by occasional periods of very heavy mortality which sometimes involves a single sp., sometimes several spp.--From auth. abstr.

Inozemtsev, A. A. (V. I. Lenin State Pedag. Inst. Moscow, USSR.) [INFLUENCE OF THE SPOTTED FLYCATCHER (MUSCICAPA HYPOLEUCA PALL.) ON THE ABUNDANCE OF ITS PREY.] Doklady Akad. Nauk SSSR (Biol. Sci.) 137(1/6): 223-226, illus. 1961. [From Biol. Abstr. 38(2), 1962, from Doklady Akad. Nauk SSSR 137(5), 1961.] WR 106: 58

Translation [from Russian].

James, I. R. CONTROL OF QUELEA BIRDS WITH PARATHION. Pest Technol., Pest Control & Pesticides 3(9): 208-209. June 1961. [From Bibliog. Agr. 26(3), 1962.] WR 106: 58

Kuroda, N. RESEARCH ON THE WINTER ROOST-MORTALITY IN THE GREY STARLING. Misc. Repts. Yamashina's Inst. Ornithol. & Zool. 2(15): 99-122. 1960. [From Auk 79(1), 1962.] WR 106: 58

In Japanese; tables and a long summary in English. Analysis of birds found dead in three large winter roosts of Sturnus cineraceus in Japan. Of 74 dead birds examined, 69 were apparently killed by an unidentified disease characterized by hemorrhages of brain and other organs, and lung congestion. Analyses of parasitic infestation, sex ratio, gonad development, fat deposition, and skull ossification of the sample are also given.

Way, Roger D. (N. Y. State Agr. Expt. Sta., Geneva.) BIRD DAMAGE TO FRUIT CROPS. Plants & Gardens 17(3): 51-55, illus. 1961. [From Biol. Abstr. 37(1), 1962.] WR 106: 58

Damage from birds to fruit crops often greatly exceeds the total combined damage from insects, diseases, rodents and unfavorable weather. Most destructive are robins, starlings, and cedar waxwings. Control of birds is difficult. The only sure method thus far is to physically obstruct the birds from getting at the fruit, as in cloth netting over berry bushes or white paper bags over bunches of grapes or special fruiting branches. Other methods are: shooting (very effective against starlings), scarecrows, noise makers, cats, repellents (non-toxic to man), strips of aluminum foil, spirolum whirlers, phonograph records or distress calls, etc.--A. H. Graves.

Weinzierl, Hubert. ZUR ERNAHRUNGSBIOLOGIE DES STARS (STURNUS VULGARIS). [THE FOOD OF STARLINGS (S. VULGARIS).] Ornithol. Mitteil. 13(7): 133-134. 1961. [From Biol. Abstr. 37(2), 1962.] WR 106: 58

[In German.] In 1959 when May Beetles (?) increased rapidly, starlings consumed large numbers. In 1958-59 potato beetles increased and were eaten. The starling is beneficial in many agricultural areas.--D. E. Davis.

BIRDS--PARASITES AND DISEASES

Gusev, V. M. [BREEDING COLONIES OF ROOKS AS NATURAL FOCI OF CERTAIN DISEASES: SALMONELLOSIS, PSITTACOSIS, Q FEVER, LEPTOSPIROSIS.] Doklady Akad. Nauk SSSR 140: 268-271. 1961. [From Vet. Bull. 32(4), 1962.] WR 106: 58

In Russian. Birds belonging to 79 species were examined over 2 years in Dagestan and Stavropol territory. Salmonella was isolated from 59 of 1,142 organs of 14 out of 79 species. Leptospiral antibodies were present in 10 of 148 sera from 2 out of 8 species; psittacosis antibodies in 23 of 275 sera from 9 out of 27 species; Q fever antibodies in 44 of 395 sera from 19 out of 38 species. Rooks were one of the species in which all the infections occurred.--R.M.

Hayes, Richard O., Joan B. Daniels, Kathleen S. Anderson, Margaret A. Parsons, Herbert K. Maxfield, and Louis C. LaMotte. (Communicable Disease Center, PHS, Taunton, Mass.) DETECTION OF EASTERN ENCEPHALITIS VIRUS AND ANTIBODY IN WILD AND DOMESTIC BIRDS IN MASSACHUSETTS. Am. J. Hygiene 75(2): 183-189. Mar. 1962. WR 106: 59

Serologic surveys of wild birds and of farm flock domestic birds in southeastern Mass. revealed low EE antibody rates for the period 1957-9. No human or equine cases were detected during these years. The degree of virus activity in the wild birds and in farm flocks appeared related to the probability of infection in humans and horses.--From summ.

Hicks, Ellis A. (Iowa State Coll., Ames.) CHECK-LIST AND BIBLIOGRAPHY ON THE OCCURRENCE OF INSECTS IN BIRDS' NESTS / SUPPLEMENT I. Iowa State J. Sci. 36(3): 233-348. 15 Feb. 1962. WR 106: 59

Organization of the supplement is identical to that of the initial checklist (Hicks, WR 96: 57), there being entomological and ornithological sections as well as a bibliography.

Spasskii, A. A., and L. P. Spasskaya. [PARASITISM OF RODENTS BY THE CESTODES OF PASSERINE BIRDS.] Trudy Gel'mintol. Lab. Akad. Nauk SSSR 10: 212-216. 1960. [From Biol. Abstr. 37(1), 1962, from Referat. Zhur., Biol., 1961, no. 6B60.] WR 106: 59

Translation [from Russian]. The cestodes Passerilepsis passeris (Hymenolepididae), normal parasites of passerine birds, are often found in the chipmunk Eutamias sibiricus of Siberia. A detailed description of this sp. is given, based on material from the chipmunks of Yakut. A comparison of P. passeris from rodents with those from sparrows and black grouse is presented. Hymenolepsis muris sylvatici (Rudolphi 1819), reported by various authors in the mouse spp., obviously is the same as H. crenata (Goeze), which is a normal parasite of sparrows, but is often found in birds of other orders (Woodpeckers, Galliformes). The cestodes of land birds are not host specific and can infect various vertebrate classes under favorable ecologic conditions.

GAME BIRDS--GENERAL

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) BANDING OF MIGRATORY GAME BIRDS, 1959. Game Res. Ohio 1: 99. Apr. 1962. WR 106: 59

Progress report. Sex and age data are tabulated for 1,383 waterfowl (mallard, wood duck, black duck, and coot) and 1,450 mourning doves banded in Ohio during 1959.

Keymer, I. F. INFECTIOUS SINUSITIS OF PHEASANTS AND PARTRIDGES. Vet. Record 73: 1034-1038. 1961. [From Vet. Bull. 32(3), 1962.] WR 106: 59

The disease in pheasants (Phasianus colchicus), partridges (Perdix perdix) and red-legged partridges (Alectoris rufa) is described. Diagnosis in pheasants was based upon clinical signs, serological examinations, lesions, microscopical examination of sinus exudate, culture results, results of embryo inoculations and transmission experiments using susceptible turkeys, domestic fowls, a pheasant and a partridge. It was shown that the disease is associated with pleuropneumonia-like organisms.--From auth. summ.

QUAIL

Crispens, Charles G., Jr., Irven O. Buss, and Charles F. Yocom. (Wash. State Univ., Pullman.) ADDITIONAL DATA ON FOOD OF CALIFORNIA QUAIL IN EASTERN WASHINGTON. Condor 64(2): 166-167. Mar.-Apr. 1962. WR 106: 59

Two tables of analyses of crop and gizzard contents, omitted from an earlier paper [WR 101: 47] are included.--Carolyn S. Trapp.

Frye, Ozro Earle, Jr. ASPECTS OF THE ECOLOGY OF THE BOBWHITE QUAIL IN CHARLOTTE COUNTY, FLORIDA. Ph.D. thesis, Univ. Fla. 376 p. 1954. [Abstr. in Dissertation Abstr. 22(8), 1962.] WR 106: 60

A 1946-53 study involving investigations of quail populations and factors affecting quail abundance. Principal effect of burning on vegetation was the temporary suppression of perennials to the advantage of annuals--including important quail foods. The seed of Sceleria setacea was the most important single food item. There was a trend in sex ratios indicating the excess of cocks to be inversely proportional to the size of the population. Quail reproduction as measured by percentages of juveniles was related inversely to amount of summer rainfall and directly to abundance of Sceleria setacea. Differential mortality favoring cocks and operative principally in the mature segment of the population was demonstrated. Moderate grazing is believed to be beneficial to quail. Hunting is believed to effect the composition but not the size of subsequent quail populations. Quail population on a 5,000 acre area was doubled by the use of artificial feeders. Recommended management techniques included control burning, manipulation of grazing, and pasture improvement.

Kirkpatrick, Charles M., Herbert E. Parker, and John C. Rogler. (Purdue Univ., Lafayette, Ind.) SOME COMPARISONS OF THYROID GLANDS OF BOBWHITES AND JAPANESE QUAIL. J. Wildl. Mgmt. 26(2): 172-177. Apr. 1962. WR 106: 60

Bobwhites and Japanese quail grown on a diet containing 300 parts per billion of iodine showed no significant difference between species in thyroid size per unit body weight at any age. Iodine-131 uptake was similar in both species at 31 days of age; however, thyroid glands of bobwhites accumulated more I-131 than those of Coturnix at 44, 50, and 99 days. Iodine content of thyroid glands of Coturnix was much higher at 31 and 44 days than that of glands of bobwhites. Concentration of iodine was relatively low in both species at 31 days and increased with age, but it increased much earlier in Coturnix. Concentration of iodine by Coturnix at 44 days was almost five times that of bobwhite, but at 99 days the concentration was similar in both species. --From auth. summ.

Lyon, David L. (Iowa State Univ., Ames.) COMPARATIVE GROWTH AND PLUMAGE DEVELOPMENT IN COTURNIX AND BOBWHITE. Wilson Bull. 74(1): 5-27, 7 figs. + 1 pl. Mar. 1962. WR 106: 60

Summary: Growth and plumage development of pen-reared migratory Japanese quail are described and compared with bobwhites reared under the same conditions. In young Coturnix an extra molt and plumage were noted and termed the first post-juvenal molt and the second juvenal plumage, respectively. The molt begins on the ventral, humeral, and femoral tracts at approximately three weeks of age and coincides with the post-juvenal wing molt. The molt is complete with the exception of the primaries, and the birds are in full second juvenal plumage at approximately eight to nine weeks of age. The age at which the next, or second post-juvenal molt, begins apparently is influenced by the date of hatching. Birds hatched late in the season begin to molt at a younger age than do early hatched birds. Early hatched birds required a longer period to complete this molt.

Watson, George E. (Peabody Museum Nat. Hist., New Haven, Conn.) MOLT, AGE DETERMINATION, AND ANNUAL CYCLE IN THE CUBAN BOBWHITE. Wilson Bull. 74(1): 28-42, 2 figs. Mar. 1962. WR 106: 60

First-year birds may be separated on the basis of the outer two pointed juvenal primaries and white-tipped primary coverts retained until the second prebasic molt. Colinus virginianus cubanensis undergoes 2 molts a year, a complete prebasic and a partial prealternate. The sequence and timing of these molts are described, and differences between the sequence of the molt of various portions of the plumage in first-year and adult birds are pointed out. The breeding season and its relation to the molting season are discussed. It is concluded that the two are not directly under the same hormonal control in this species.--From summ.

Craighead, John J., and Maurice G. Hornocker. (Mont. State Univ., Missoula.) A COMPARISON OF METHODS FOR OBTAINING MORTALITY RECORDS OF RING-NECKED PHEASANTS. J. Wildl. Mgmt. 26(2): 224-226. Apr. 1962. WR 106: 61

The paper describes a method for assessing first-year mortality of pheasants (Phasianus colchicus) by using colored neck markers to supplement numbered leg bands. The use of the colored neck markers in combination with the numbered leg bands provided a better basis for assessing first-year mortality from natural causes than did leg band recoveries. Eighty-six and 84 per cent of all first-year non-hunting recoveries from 2 releases of banded pheasants were obtained by using a highly visible colored neck marker. Death records from recovery of neck markers were more than 8 times greater than could have been obtained with the use of numbered leg bands only. The incidence of leg-band recovery was increased almost 3 times by prior recovery of neck markers, followed by intensive search for leg bands. The authors conclude that the method of using colored neck markers on released pheasants increases the size of the recovery sample and yields greater precision in obtaining data on natural mortality than the standard procedure using leg bands only. It also increases the incidence of leg band recovery.--From auth. abstr.

Edwards, William R. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) HEN PHEASANT KILL BY HUNTING. Game Res. Ohio 1: 26-27. Apr. 1962. WR 106: 61

Progress report. Estimated losses of Ohio fall population to hunting were 74% males and 20% females.--From abstr.

Greeley, Frederick. (Univ. Mass., Amherst.) EFFECTS OF CALCIUM DEFICIENCY ON LAYING HEN PHEASANTS. J. Wildl. Mgmt. 26(2): 186-193. Apr. 1962. WR 106: 61

The failure of pheasants to become widely established on acid soils in the eastern United States especially along the southern edge of the range, has led to the hypothesis that calcium deficiency prevents successful establishment of the birds. To determine the effects of calcium deficiency on hen pheasants, levels of calcium ranging from 0.37% to 2.34% of the diet were fed to hens during the breeding season. Reductions in the rate of egg production, the amount of ash in the leg bones, and in the thickness of eggshells were observed at 1.09%, and less, of calcium in the diet; egg size and bone weight declined to a lesser extent. Hens which produced few eggs on a low-calcium diet lost more weight than hens which produced many eggs on a high-calcium diet. The bone-ash content and egg-shell thickness of wild hens from thriving populations in central Illinois were equivalent to those found in the experimental hens with 2%, or more, of calcium in their diets. These data were indicative of a positive calcium balance in the wild hens. Hens released in winter south of the pheasant range on acid soils and collected during the subsequent breeding season showed no evidence of a decline in bone-ash.

Greeley, Frederick, Ronald F. Labisky, and Stuart H. Mann. (Univ. Mass., Amherst.) DISTRIBUTION AND ABUNDANCE OF PHEASANTS IN ILLINOIS. Ill. Nat. Hist. Surv. Div., Biol. Notes no. 47. p. 1-16, 16 figs. Mar. 1962. WR 106: 61

Summary: Pheasants first established self-maintaining populations in several northeastern counties of Illinois during the 1920's. They spread westward and southward and had established a center of abundance in Livingston and Ford counties in east-central Illinois by the late 1930's, a center that has persisted through the 1940's and 1950's. Small areas of abundance existed in northeastern Illinois and in Stephenson County of northwestern Illinois in the late 1940's; some of these areas of abundance have persisted but at lower population levels. Pheasants have never established self-maintaining populations in the central western and southern counties of Illinois, except in a few small areas where populations exist at low levels of abundance.

Nomsen, Richard C. (Iowa Conserv. Comm., Hampton.) RESULTS OF THE 1958 AND 1959 PHEASANT HUNTER SURVEY. Proc. Iowa Acad. Sci. 68: 281-283. 1961. WR 106: 61

Abstract: Hunter questionnaire surveys were conducted in 1958 and 1959 to determine the number of pheasant hunters, the total number of birds killed, and the distribution of hunt-pressure in Iowa. A one per cent random sample

was selected from the current license files. Results indicated that 75.2% of the licensees hunted pheasants in 1958 compared to 74.6% in 1959. A total of 267,455 hunters bagged 1,548,564 ringnecks in 1958 and 238,903 hunters killed 1,070,285 birds in 1959. Forty to 44 per cent of the total season kill occurred during the first two days of the season. Hunter success figures and post-season sex ratios indicated that the major portion of Iowa's primary pheasant range could support greater hunting pressure. The response by cooperating hunters was excellent, with 43.6% and 49.0% returning the questionnaire for 1958 and 1959, respectively.

Seibert, Henri C. (c/o Waterloo Wildl. Expt. Sta., New Marshfield, Ohio.) ENERGY STUDIES ON THE REEVES PHEASANT. Game Res. Ohio 1: 138-140, 1 fig. Apr. 1962. WR 106: 62

Abstract of progress report: Preliminary energy studies on Reeves pheasants at the Waterloo Wildlife Experiment Station [Ohio] have revealed that (1) pheasants are adaptable to experimental conditions, (2) the Reeves pheasant apparently will provide good regression curves and (3) there is a pronounced sexual difference in tolerance for high temperatures.

Wagner, Frederic Hamilton. ROLE OF WEATHER IN SHORT-TERM POPULATION FLUCTUATIONS OF WISCONSIN PHEASANTS. Ph.D. thesis, Univ. Wis. 235 p. 1961. [From long abstr. in Dissertation Abstr. 22(6), 1961.] WR 106: 62

Wis. average hatching dates are significantly correlated with prenesting temperatures. Yearly percentage change in kill is significantly correlated with prenesting temperatures in Wis. and other states. Weather, operating directly or indirectly, appears to be the principle cause of short-term fluctuation in midwestern pheasants, with prenesting temperatures the dominant influence in Wis. and perhaps in other parts of the Midwest.--From abstr.

GROUSE, PARTRIDGE, ETC.

Aleksandrova, I. V., and L. I. Krasovskii. [NESTING SITES OF THE COMMON PARTRIDGE (PERDIX PERDIX) IN THE MOSCOW SUBURBS IN THE FALL.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 65(4): 34-40. 1960. [From Biol. Abstr. 37(3), 1962, from Referat. Zhur., Biol., 1961, no. 11D507.] WR 106: 62

Translation [from Russian]. Original with English summary. In the summer the common partridge lives in crop fields, meadows and along forest edges. After hay and grains are cut, they seek cover and weed seeds in the high steppe grass. In the past, with extensive agriculture, the partridge was almost always guaranteed cover, although the food supply in the high steppe grass was meager. The almost complete destruction of high steppe grass in the Moscow suburbs is the main reason for the sharp drop in numbers of partridges. Restoration of the partridge to the central regions of the Russian plain will require the creation of artificial shelter areas planted with mixtures of grasses or hemp and legumes.

Bezubik, Bernard. BADANIA NAD HELMINTOFAUNA DZIKICH KUROWATYCH (GALLIFORMES) WOJ. LUBELSKIEGO. I. HELMINTOFAUNA KUROPATWY (PERDIX PERDIX L.). [RESEARCH ON THE HELMINTHOFAUNA OF WILD GALLIFORMES OF THE DISTRICT OF LUBLIN. I. THE HELMINTHOFAUNA OF PERDIX PERDIX L. In: CONGRESS OF THE POLISH PARASITOLOGICAL SOCIETY LUBLIN, 19TH-22ND OCT., 1958.] Wiadomości Parazytol. 4 (5/6): 685-687. 1958. [From Biol. Abstr. 38(1), 1962.] WR 106: 62

[In Polish.] Abstract.

Leporati, Lamberto. IL FRANCOLINO D'ERCKEL (FRANCOLINUS ERCKELI ERCKELI RÜPPELL). [ERCKEL'S FRANCOLIN (FRANCOLINUS ERCKELI ERCKELI RÜPPELL).] Ricerche Zoologia Applicata alla caccia (Bologna) 34. 18 p., 9 figs. 1961. WR 106: 62

In Italian with summaries in French, English, and German. The systematics, morphology, native habitat, biology, and pathology of this African species is reviewed. Information is given on laboratory and field studies of this bird in Italy and its introduction to Hawaii and California.

Marchant, S. OBSERVATIONS ON THE BREEDING OF THE SANDGROUSE PTEROCLES ALCHATA AND SENEGALLUS. Bull. Brit. Ornithol. Club 81(8): 134-141. 1961. [From Biol. Abstr. 38(1), 1962.] WR 106: 63

The breeding biology of these 2 spp. of sandgrouse in Iraq is discussed under the following sections: Breeding Habitat, Nest, Clutch Size, Laying, Incubation, Incubation Period, The Young, and General. It is stated that neither spp. normally prepares a nest hollow; the clutch size is 3, rarely 2; in neither spp. was there any evidence of the male supplying the incubating female with water, but in senegallus the male brings water to the young in its belly feathers; the breeding of both spp. extends from early May until late July.--B. L. Sage.

Sakane, M. BAMBUSICOLA THORACICA SONORIVOX INCREASING IN HYOGO. Tori 15: 286-289. 1960. [From Auk 79(1), 1962.] WR 106: 63

In Japanese with English summary. Bamboo partridges of the nominate (mainland China) race were introduced in Japan about 30 years ago, and thrived. Some individuals of sonorivox, the Formosan race, were also introduced, but there have been no recent references to birds of this race in Japan. The author found a group of about 20 sonorivox in a limited area near the site of the original introduction.--K.C.P.

Stempel, M. E., and Sam Rodgers, Jr. (Iowa Conserv. Comm., Ottumwa.) HISTORY OF PRAIRIE CHICKENS IN IOWA. Proc. Iowa Acad. Sci. 68: 314-322, 1 fig. 1961. WR 106: 63

Abstract: The peak period for prairie chickens (Tympanuchus cupido pinnatus) in Iowa was about 1880 when 69% of the state was in farms. They were found in prairie areas throughout the state. Hunters found this grouse ideal game and bags of 25 to 50 per day were easily taken. Market hunters frequently killed 200 or more per day. Farmers trapped and shot the birds to sell or to eat. As long as marginal prairie areas were only lightly disturbed by agriculture, the prairie chickens held on, but when intensive farming began, the birds nested in hayfields or in over-grazed pastures where brooding was unsuccessful. By 1900, 90% of the state was in farms and birds were vanishing. A few remained until 1954 in a poorly drained portion of Appanoose County. Since then only occasional strays have been reported.

TURKEY

Donohoe, Robert W. (Waterloo Wildl. Expt. Sta., New Marshfield, Ohio.) WILD TURKEY PRODUCTIVITY. Game Res. Ohio 1: 86-87. Apr. 1962. WR 106: 63

Abstract of progress report: Wild turkey observations were made on four widely separated forest areas in the state in 1959. A combined total of 59 adults, 208 juveniles and 43 unidentified turkeys were observed on the four areas. These data suggest that the wild turkey has been re-established in certain forested areas of Ohio.

Ellis, Ralph J. (Okla. State Univ., Stillwater.) TRAPPING AND MARKING RIO GRANDE WILD TURKEYS. Proc. Acad. Sci. 41: 202-212, 5 figs. 1961. WR 106: 63

A drop net designed by the author is described. Improvements include better net clearance and net tensions and modifications for ease of erection, reliable operation, and transportation. In the Okla. trapping program, however, cannon nets proved to be superior to drop nets. Different neck-marking techniques are described and compared.

Nixon, Charles M. (Waterloo Wildl. Expt. Sta., New Marshfield, Ohio.) WILD TURKEY AGING. Game Res. Ohio 1: 107-117, 17 figs. Apr. 1962. WR 106: 63

Abstract of progress report: Wild turkey poults of known age -- from 1 day to 16 weeks -- were studied for aging characteristics in 1959. Measurements were made of body weight and lengths of various feathers, and the sequence and timing of down replacement and feather development were recorded. Poults in

each of the 17 age classes were mounted and photographed for reference. [Reproductions of these photographs are included in this paper.] Three major categories of aging criteria exist: (1) down replacement and feather development; (2) head and neck coloration changes; and (3) height and relative size. This paper describes the distinguishing characteristics of each age class within each of these three categories.

DOVES AND PIGEONS

Brown, Bruce M. (Calif. Dept. Fish & Game, Sacramento.) FOOD HABITS OF THE MOURNING DOVE IN CALIFORNIA. Calif. Fish & Game 48(2): 91-115, 9 figs. Apr. 1962. WR 106: 64

Of all food eaten by the 1,016 mourning dove collected during this study, approximately two-thirds consisted of the seeds of a relatively few principal annual weed species. The other one-third was made up of the seeds of cultivated plants, the bulk of which were cereal grains of the grass family. Turkey mullein, red maids, and the buckthorn weeds contributed 44.3% of the total volume of food eaten and occurred in over 30% of the crops. These three weedy annuals, together with the cereal grains, wheat, milo, and barley seem to be important to the ecology of the dove throughout much of its range in Calif. The mourning dove in Calif. obtains most of its food from lands disturbed by man, either by cultivation, grazing, ditch and road bed maintenance or similar practices which encourage weedy annuals and cultivated plants. Hence, as long as man continues these practices, food should not be a limiting factor for the mourning dove in Calif.--From concl. and summ.

Chambers, Glenn D., Howard M. Wight, and Thomas S. Baskett. (Mo. Conserv. Comm., Columbia.) CHARACTERISTICS OF WINTERING FLOCKS OF MOURNING DOVES IN MISSOURI. J. Wildl. Mgmt. 26(2): 155-159. Apr. 1962. WR 106: 64

Summary: Doves (331) were shot from 10 winter flocks on a permanent summer banding site in north-central Mo. Seventy-seven young per 100 birds presumed to be adults were shot. In the entire sample, there were 204 ♂♂ per 100 ♀♀. Among presumed adults, the ratio was 274 : 100. Male doves evidently winter farther north than ♀♀. Twenty-three doves collected after Oct. had been banded on the study area in summer; 21 were adult ♂♂. Winter resident ♂♂ may help account for the high rate of homing to nesting areas observed among ♂ doves in other studies.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) MOURNING DOVE MOVEMENT STUDY, 1959. Game Res. Ohio 1: 125-126, 1 fig. Apr. 1962. WR 106: 64

Progress report. A total of 1,464 mourning doves was known to have been banded in Ohio during 1959. Of these, 1,042 were nestlings and the remaining 422 were immatures or adults that were trapped.--From abstr.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) MOURNING DOVE POPULATION INVENTORY, 1959. Game Res. Ohio 1: 28-30, 2 figs. Apr. 1962. WR 106: 64

Abstract of progress report: Mourning dove coo-count surveys were undertaken in 20 counties located throughout Ohio during the period Aug. 4 through Oct. 27, 1959. There was a relatively consistent reduction in the number of mourning doves heard cooing during this period. In contrast, there was a relatively small decrease in total numbers of doves observed.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) MOURNING DOVE POPULATION STATUS; LATE FALL AND WINTER, 1959. Game Res. Ohio 1: 30-31. Apr. 1962. WR 106: 64

Abstract of progress report: Visual surveys of Ohio mourning dove populations were conducted on 20 survey routes, each 15 miles long, from Nov. 3 through Dec. 29, 1959. Compiled results indicated a relatively steady decline of statewide dove populations throughout the survey period. Comparisons between the results obtained from the audio-visual and visual surveys over the same routes pointed out the differences in the methods and times of the two surveys.

Haynes, Charles. (Idaho Fish & Game Dept., Boise.) THE MOURNING DOVE. Idaho Wildl. Rev. 14(3): 3-5, 3 figs. Nov.-Dec. 1961. WR 106: 65

First part of a 2-part article. Deals with nesting, migration, mortality and effects of hunting of mourning doves in Idaho. Doves begin arriving in Idaho in Mar., establish territory and raise two young. They may nest as many as 5 times a season. Young birds begin migration about two weeks after leaving the nest; the adults follow with the advent of the first period of cold weather. Adult mourning doves feed almost exclusively upon the seeds of weeds and cereal grains; the young are fed pigeon milk. The annual mortality of the population is conservatively estimated at 60%, with slightly more than 15% due to hunting.

Haynes, Charles. (Idaho Fish & Game Dept., Boise.) THE MOURNING DOVE. Idaho Wildl. Rev. 14(6): 3-5, 4 figs. May-June 1962. WR 106: 65

The second of two articles (see above). Deals with research and management of the mourning dove in Idaho. Information for dove management is obtained by census counts, harvest information, and banding studies. There is a population turnover of approximately two years. It is felt that the present mourning dove management program is adequate for current conditions.

Kossack, Charles W. (Ill. Nat. Hist. Survey, Urbana.) ARTIFICIAL RESUSCITATION OF MOURNING DOVES. J. Wildl. Mgmt. 26(2): 208. Apr. 1962. WR 106: 65

"Success in mouth-to-mouth resuscitation was achieved 8 times out of 10 attempts made on doves ranging in age from nestlings 4 days old to adults. From all indications, nine of these birds had stopped breathing, and one was gasping in its final effort to survive when the rescue technique was applied."

Lehrman, D. S., P. N. Brody, and R. P. Wortis. THE PRESENCE OF THE MATE AND OF NESTING MATERIAL AS STIMULI FOR THE DEVELOPMENT OF INCUBATION BEHAVIOR AND FOR GONADOTROPIN SECRETIONS IN THE RING DOVE (STREPTOPELIA RISORIA). Endocrinol. 68: 507-516. 1961. [From Auk 79(1), 1962.] WR 106: 65

Gonadotropin activity in the ♀ is stimulated by presence of ♂ and augmented by presence of nesting material. Preparation for incubation enhanced in both ♂ and ♀ by presence of a mate.--H.C.S.

MacMillen, Richard E. (Pomona Coll., Claremont, Calif.) THE MINIMUM WATER REQUIREMENTS OF MOURNING DOVES. Condor 64(2): 165-166. Mar.-Apr. 1962. WR 106: 65

Captive mourning doves drink at least twice as much water as needed to maintain body weight; laboratory assessments of water requirements should not, therefore, be based on ad libitum water consumption. Mildly dehydrated doves with losses of up to 15% of body weight can make up the loss with one or two draughts of water.--Carolyn S. Trapp.

Martinson, R. Kahler. (Olentangy Wildl. Expt. Sta., Ashley, Ohio.) MOURNING DOVE BREEDING POPULATION INVENTORY, 1960. Game Res. Ohio 1: 32-35, 2 figs. Apr. 1962. WR 106: 65

Abstract of progress report: Mourning dove coo-count surveys were conducted in 15 counties representing the four major physiographic regions in Ohio during the period Apr. 5-Oct. 25. The number of doves heard cooing from Apr. 5-July 5 described a relatively high level of cooing activity. After this period a steady decline in the number of doves heard cooing persisted until the termination of the study. Dove numbers fluctuated at a relatively low level during the early summer, increased to a peak in late Aug. and early Sept., and then declined during late Sept. and Oct. to a level similar to that existing in early summer.

Pollack, Bill. (Div. Fisheries & Game, Westboro, Mass.) THE MOURNING DOVE. Mass. Wildl. 12(5): 7-9, illus. Sept.-Oct. 1961. WR 106: 65

To determine whether Mass. dove populations are extensive enough to justify an open season on public hunting grounds, a dove census was conducted throughout the state. The counts covered a distance of 20 miles and consisted of 20 separate three-minute stops at one-mile intervals, beginning one-half hour

before sunrise. Large concentrations of doves are found on most of the 15 Mass. public hunting grounds each fall for short periods of time in early Sept. A season held about the last two weeks in Sept. would allow a harvest of what is now a largely unutilized resource. A life history of the mourning dove is presented.

[Teer, James G., compiler.] ABSTRACTS OF MOURNING DOVE LITERATURE. US F&WS Circ. no. 136. vi + 153 p. Dec. 1961. WR 106: 66

This compilation of 464 abstracts is a consolidation and continuation of a series of four issued in 1949, 1951, 1953, and 1957 by Harold S. Peters [see WR 75: 59 and WR 91: 96]. Mourning dove literature to Oct. 1961 is arranged by state, country, or region. Author and subject indices are included.

Walkinshaw, Lawrence H. (819 North Ave., Battle Creek, Mich.) MOURNING DOVES RAISE EIGHT YOUNG IN ONE YEAR IN THE SAME NEST. Wilson Bull. 74(1): 101. Mar. 1962. WR 106: 66

Four successive nestings believed to be by the same female dove.

WATERFOWL

Bednarik, Karl E. (Magee Marsh Wildl. Area, Oak Harbor, Ohio.) WATERFOWL NESTING POPULATION ESTABLISHMENT IN UNOCCUPIED RANGE. Game Res. Ohio 1: 147-154. Apr. 1962. WR 106: 66

A progress report dealing with the 1959 Ohio waterfowl restoration project patterned after the mass production techniques for waterfowl developed by the N. Y. Conserv. Dept.

Chamberlain, E. B., Rossalius C. Hanson, Robert H. Smith, G. H. Jensen, J. E. Chattin, and F. A. Glover. MEXICO WINTER WATERFOWL SURVEY / 1962. US F&WS. ii + 59 p. June 1962. WR 106: 66

Habitat conditions, flight data and waterfowl populations are summarized by region (east coast, Mexican highlands, and west coast and interior areas of Mexico) for the January 1962 flights. Results of past surveys are tabulated for comparison. Declines in total waterfowl populations were noted for all areas except the west coast where waterfowl populations were 20% above the six-year average.

Dane, Benjamin. A QUANTITATIVE ANALYSIS OF THE DISPLAY OF THE GOLDENEYE (BUCEPHALA CLANGULA (L.)). Ph.D. thesis, Cornell Univ. 114 p. 1961. [Long abstr. in Dissertation Abstr. 22(7), 1962.] WR 106: 66

Gates, John M. (Wis. Conserv. Dept., Box D, Horicon.) BREEDING BIOLOGY OF THE GADWALL IN NORTHERN UTAH. Wilson Bull. 74(1): 43-67, 3 figs. Mar. 1962. WR 106: 66

A 1956-7 study of nesting, renesting, and productivity at Ogden Bay Refuge. Includes information on breeding behavior and survival rates. Nesting was delayed a month after spring arrival. Preferred nest sites were elevated and included dense upland vegetation. Over-all nest success was 45%. Completed clutch sizes averaged 10.0 eggs. Fifty-two per cent of all unsuccessful hens renested, and renesting accounted for 25% of annual production. Renesting ability declined after loss of the second clutch and was lower during the latter stages of incubation. Declining nest-success rates during a 10-year period are discussed in relation to renesting and nest predator control.--Author.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) COOPERATIVE WATERFOWL BANDING IN CANADA, 1959. Game Res. Ohio 1: 117-118. Apr. 1962. WR 106: 66

Abstract of progress report: Ohio cooperators worked with banding crews in Saskatchewan and Manitoba from early July to mid-August, 1959. Exceptionally dry conditions prevailed in the prairie provinces. The Saskatchewan crew

banded 950 waterfowl while the Manitoba crew banded 1,079. [Sex and age ratios are tabulated.] The high proportion of adult : local ducks in the Saskatchewan areas suggests considerably lower reproduction there than in the areas worked in Manitoba.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WATERFOWL BROOD SURVEY OF THE KILLDEER PLAINS AND DELAWARE RESERVOIR WILDLIFE AREAS, 1959. Game Res. Ohio 1: 65-67. Apr. 1962. WR 106: 67

Progress report. Intensified waterfowl brood studies were conducted on 2 Ohio wildlife areas during the summer of 1959. The 54 broods of ducks discovered on the Delaware Area represented a 26% increase in total production over the previous year. Twenty-nine broods of ducks, 28 of which were wood ducks, were found on the Killdeer Area. Total production increased about 19% on this area.--From abstr.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WATERFOWL HARVEST, 1959. Game Res. Ohio 1: 67-71, 1 fig. Apr. 1962. WR 106: 67

Abstract of progress report: Results of the 1959 Ohio waterfowl hunter surveys carried out in cooperation with the U. S. Fish and Wildlife Service indicated substantial increases over the previous season in the average kill per man per season of ducks and geese in Ohio. However, a substantial (31%) decrease in total Ohio duck stamp sales during 1959 resulted in an actual reduction of total duck kill from the previous year. Total goose kill increased over the previous year due to the large increase (190%) in the average kill per man per season. Shortcomings of the present system used by the Fish and Wildlife Service to obtain the waterfowl kill information are discussed, with the recommendation that in the future a stratified random sample of post offices be used for waterfowl hunter contacts.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WATERFOWL NUMBERS DURING THE FALL AND WINTER MIGRATION, 1959-60. Game Res. Ohio 1: 60-64, 4 figs. Apr. 1962. WR 106: 67

Progress report. Ohio waterfowl migration surveys indicated that duck populations were about the same as in 1958-9, but were 40% below the six-year average. Goose populations were 120% higher than in 1958-9 and 12% above the six-year average. Coot and merganser populations showed significant decreases from the 1958-9 and six-year averages. The annual winter waterfowl inventory showed a 38% increase in total populations over that of 1958-9. This increase apparently was due to a combination of mild weather, abundance of available cereal grains and a lack of gunning pressure; the result was that a much larger than normal portion of the migrant waterfowl remained in the State.--From abstr.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WOOD DUCK NEST BOX CHECKS, 1959. Game Res. Ohio 1: 73-76, 1 fig. Apr. 1962. WR 106: 67

Progress report. Twenty-nine per cent of 1,534 wood duck nest boxes checked during late June 1959 in Ohio were used for nesting by wood ducks, compared with 24% in 1958. One hundred nest boxes were used on the Delaware Reservoir Wildlife Area [Ohio] for a study of predator-proofing devices. Devices tested were (1) metal face plate, (2) wooden funnel and (3) metal shield. Greatest utilization by wood ducks (54%) was in the boxes equipped with the metal face plate. Boxes with the wooden funnel had the lowest use (33%) by wood ducks and the highest use (42%) by starlings.--From abstr.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WOOD DUCK NEST BOX CHECKS, 1960. Game Res. Ohio 1: 76-79, 1 fig. Apr. 1962. WR 106: 67

Progress report. Thirty-two per cent of 1,333 wood duck nest boxes checked during late June 1960 in Ohio were used for nesting by wood ducks. Chi-square tests indicated that this rate of utilization was not significantly different from that of 1959. Various predator-proofing devices for these nest boxes were checked. Results of the predator-proofing studies indicated the the utilization by wood ducks of the metal flip-top box was significantly lower than

the expected. Utilization by wood ducks of the other types of boxes was found to be normal. Only those boxes which were unprotected were occupied by raccoon in significant numbers.--From abstr.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WOOD DUCK PRODUCTION ON OHIO STREAMS, 1959. Game Res. Ohio 1: 71-73, 2 figs. Apr. 1962. WR 106: 68
Abstract of progress report: Seventy-one broods of wood ducks were discovered on 109 linear miles of streams surveyed throughout Ohio during 1959. The 0.65 broods per linear mile surveyed represent a 91% increase over the four-year average.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WOOD DUCK TRAPPING AND BANDING, 1959. Game Res. Ohio 1: 119-121. Apr. 1962. WR 106: 68
Progress report. Sex and age data are given for 528 wood ducks trapped in Ohio during 1959. Forty-seven were incubating ?? captured in wood duck nest boxes.

Kadlec, John A. (Rose Lake Wildl. Expt. Sta., East Lansing, Mich.) EFFECTS OF A DRAWDOWN ON A WATERFOWL IMPOUNDMENT. Ecology 43(2): 267-281, 8 figs. Spring 1962. WR 106: 68
The effects of a drawdown on the soil, water, vegetation, invertebrates, and populations of waterfowl of an impoundment were studied. An increase in plant nutrients, a decrease in invertebrate populations, and no notable affect on the plant species composition are reported. Waterfowl utilization of the area prior to the drawdown and after reflooding is discussed.--From auth. summ.

Karlson, Alfred G., C. L. Davis, and M. L. Cohn. (Mayo Clinic, Rochester, Minn.) SKOTOCHROMOGENIC MYCOBACTERIUM AVIUM FROM A TRUMPETER SWAN. Am. J. Vet. Res. 23(94): 575-579. May 1962. WR 106: 68
In English with Interlingua summary. Isolated from tuberculous lesions in an adult trumpeter swan that died Jan. 1948 in the federal migratory bird refuge in Nev.

Marquardt, Richard E. (Okla. State Univ., Stillwater.) INVESTIGATIONS INTO HIGH-INTENSITY PROJECTILE EQUIPMENT FOR NET TRAPPING GEESE. Proc. Okla. Acad. Sci. 41: 218-223, 2 figs. 1961. WR 106: 68
Through the use of modifications described in this paper much higher energies are possible (velocity 1.1 x and muzzle 1.8 x) than those formerly obtained using standard equipment.

Salyer, James W. (Mo. Coop. Wildl. Res. Unit, Columbia.) A BOW-NET TRAP FOR DUCKS. J. Wildl. Mgmt. 26(1): 219-221, 1 fig. Apr. 1962. WR 106: 68
Summary: A new trap for capturing incubating female ducks using a net-covered bail that pivots on an axle and is powered by coil springs is described. When cocked, the bail is nearly vertical and is easily set in any vegetation. It cannot be accidentally released but is sprung from a distance with a trip cord. Fifty-eight incubating hens were caught in as many tries without mortality or injury.

Sdobnikov, V. M. [GEESE AND DUCKS OF NORTHERN TAIMYR.] Trudy Nauch.-Issledovatal. Inst. Sed'skokhoz Kraineva Severa 9: 154-183. 1959. [From Biol. Abstr. 37(3), 1962, from Referat. Zhur., Biol., 1961, no. 8D521.] WR 106: 68
Translation [from Russian]. On the basis of observations made in 1947-49, information is given about the distribution and biology of 14 species of goose-like birds (including the western tundra "gumennik" (Anser fabalis), the white-fronted goose (Anser albifrons), the red-throated barnacle, the Eurasian black barnacle (Branta bernicla), S. spectabilis, and Clangula hyemalis. The most detailed information is given on the western tundra "gumennik" (distribution, mode and date of arrival and departure, biology of nesting, molting, and death from chemicals). For the majority of species in Taimyr, the northern limits of their range are given.

Sickles, Ray M. PYMATUNING'S BANDS OF KNOWLEDGE. Pa. Game News 33(3): 14-19, 4 figs. Mar. 1962. WR 106: 69

At Pymatuning Reservoir in Pa. 2,409 black ducks, 6,044 mallards, and 199 Canada geese have been banded since 1938. Band returns indicate definite migration patterns for blacks and mallards. Additional banding will be done to obtain more definite information on Canada geese.--Carolyn S. Trapp.

Sieh, James G., and William Aspelmeier. (Biology Sta., Spirit Lake, Iowa.) RESULTS OF SEMI-CONTROLLED HUNTING UPON THE HARVEST OF WATERFOWL AT LAKE ODESSA, IOWA, 1960. Proc. Iowa Acad. Sci. 68: 271-280, 2 figs. 1961. WR 106: 69

Abstract: In 1960 two controlled shooting areas with a total of 25 blind sites were established. The remaining portion of the public hunting area was open to hunting without special restrictions. Checking stations were established at each of the two main access points. A total of 6,014 hunters harvested 6,499 waterfowl in 33,968 hours, averaging one bird for each 5.22 hours of hunting. Waterfowl taken included 14 species of ducks, mergansers, coots, and 3 species of geese. Mallards comprised 72% of the kill, and wood ducks accounted for 12%. Flight dates during the fall were clearly indicated by the peak kills of mallards on Oct. 19, 29, Nov. 3, 9, and 29. The sex ratio of mallards in the kill averaged 1.45 *dd* to 1 ♀ throughout the season, but increased during the 5 major flight dates to 1.71 : 1, indicating preference for drakes. A sample of 666 mallard wings indicated an age ratio of 2.4 young to 1 adult.

Trainer, Daniel O., Carl S. Schildt, Richard A. Hunt, and Laurence R. Jahn. (Wis. Conserv. Dept., Madison.) PREVALENCE OF LEUCOCYTOZOON SIMONDI AMONG SOME WISCONSIN WATERFOWL. J. Wildl. Mgmt. 26(2): 137-143, 1 fig. Apr. 1962. WR 106: 69

The presence and prevalence of the protozoan parasite Leucocytozoon simondi, were established at 3 waterfowl breeding areas studied in Wis. The disease was found to be enzootic in 2 of these areas, where it was widespread among native waterfowl populations. While the mallard (Anas platyrhynchos) was found to be the major host of this parasite, other species found infected were wood ducks (Aix sponsa), black ducks (Anas rubripes), and pintails (Anas acuta). The time, extent and duration of L. simondi transmission were established for the study areas. Attempts to evaluate the effect of this parasite on wild mallard reproduction were reported. Under the conditions of these studies, the disease appeared to be highly fatal in white Pekin ducklings (Anas boschas) but clinically inapparent in wild ducks.--D. O. Trainer.

CRANES, RAILS, SHOREBIRDS

Pagasiński, Andrzeij. HELMINTOFAUNA DOMOWYCH PTAKÓW KUROWATYCH. [THE HELMINTHOFAUNA OF THE DOMESTIC RALLIDAE. In: CONGRESS OF THE POLISH PARASITOLOGICAL SOCIETY LUBLIN, 19TH-22ND OCT., 1958.] Wiadomości Parazytol. 4 (5/6): 683-684. 1958. [From Biol. Abstr. 38(1), 1962.] WR 106: 69

[In Polish.] Abstract.

Handley, Delmar E. (Ohio Div. Wildl., Columbus 10.) WOODCOCK SINGING GROUNDS SURVEY, 1960. Game Res. Ohio 1: 45-46. Apr. 1962. WR 106: 69

Progress report. Nine woodcock singing grounds routes were surveyed in Ohio from late March through the third week of May, 1960. The average of 0.86 woodcock heard per stop was about equal to or slightly above the average for the surrounding states.--From abstr.

Hoger, Richard B. SOLUBLE LEAD POISONING IN SHOREBIRDS. Inland Bird Banding News 33(4): 52-55. 1961. [From Biol. Abstr. 37(4), 1962.] WR 106: 69

Of 1,971 birds received 1954-58 in a sick condition, 1,448 were treated with psblum and medicated water. Calcium gluconate was used for shock treatment, and force-feeding was necessary. Successful cure was attained for 32% of those treated. No sick birds were found in 1957.--R. W. Dexter.

Lind, H. STUDIES ON THE BEHAVIOUR OF THE BLACK-TAILED GODWIT (LIMOSA LIMOSA (L.)). Munksgaard (Copenhagen). 157 p., 51 figs. 1961. [From abstr. in Auk 79(2), 1962.] WR 106: 70

A very important contribution to knowledge of breeding behavior and other aspects of reproduction in shore birds based on field work in West Jutland. Contents: "Predator-reactions, Intraspecific hostile behaviour, Courtship and pair-formation, Copulation and pair-displays, Nesting behaviour, Egg-laying, Behaviour in the brooding phase, Breaking of eggs and hatching, Chicks and adults, Some causal and functional aspects of nesting and brooding behaviour, Territories and colony tendencies, and Remarks on non-reproductive behaviour." The discussions of predator reactions, the origin, motivation, and functions of displays, and the activities concerned with incubation and hatching are particularly significant and stimulating.--F.M.

Liscinsky, Steve. (Pa. Game Comm.) THE PENNSYLVANIA WOODCOCK STUDY. [PART 1.] Pa. Game News 32(10): 20-23, 3 figs. Oct. 1961. WR 106: 70

Deals with woodcock reproduction studies incidental to management. Average clutch size for 54 nests was 3.66 eggs. Woodcock nest losses (30) were the result of: predation by mammals, 10; bird predation, 1; snake predation, 2; desertion due to interference by man or dogs, 7; desertion due to retarded development of eggs, 6; and from unknown causes, 4. The average brood size was 3.03 chicks and the calculated average reproductive rate per hen was 2.88 young. This represents a loss of 22% from nesting.

Liscinsky, Steve. (Pa. Game Comm.) THE PENNSYLVANIA WOODCOCK STUDY. [PART 2.] Pa. Game News 33(4): 19-23, 5 figs. Apr. 1962. WR 106: 70

Observations on feeding behavior and soil preference are described. Woodcocks can be kept alive in captivity on about half their weight in food daily. Two birds kept for 12 days experienced a 30% weight loss, but appeared healthy when released. Woodcocks readily ate fly larvae, meal worms, venison, and luncheon meat when earthworms were not available.

Martin, Fant W. (Patuxent Wildl. Res. Center, Laurel, Md.) WOODCOCK STATUS REPORT--1961. US P&WS, Spec. Sci. Rept.--Wildl. no. 58. iv + 29 p. June 1961. WR 106: 70

Abstract: An index of the 1961 woodcock breeding population was obtained from a Singing Ground Survey conducted in 4 eastern Canadian Provinces and 19 eastern and central States. East of the Appalachians, 150 routes run in both 1960 and 1961 were available for comparison. West of this range, 73 comparable routes were covered. The population index increased 10% in the east and 8% in the west. The overall increase in the two regions combined was 9%. The mean difference in birds per route (1961 minus 1960) was calculated for States with 10 or more comparable routes (Conn., Maine, Mich., N. H., N. Y., and Pa.). The mean and standard error of the mean indicated that for all States, except N. Y., chance could have been responsible for the observed differences. In view of the many variables affecting the Singing Ground Survey, it was considered doubtful that any important change occurred in the status of the woodcock breeding population between 1960 and 1961. Factors affecting the reliability of the survey were discussed.

OTHER BIRDS

Dillery, Dean George. FOOD HABITS OF SAVANNAH AND GRASSHOPPER SPARROWS IN RELATION TO FOODS AVAILABLE. Ph.D. thesis, Ohio State Univ. 62 p. 1961. [From Dissertation Abstr. 22(11), 1962.] WR 106: 70

Based on bird stomach contents analyses and field studies. Orthoptera were eaten in proportion to the number present by both species through the summer; this was not true of other orders. In middle and late summer, grasshopper sparrows seemed to eat animals in the proportions in which they occurred in the fields, but this was not true of savannah sparrows at any time. There were no differences in animal foods taken by males and females in either species. Both

species showed preferences for certain groups; savannah sparrows ate mainly Coleoptera, Homoptera, and larvae, and grasshopper sparrows ate mainly Orthoptera, Coleoptera, larvae, and Hemiptera. The diets of savannah and grasshopper sparrows that fed in the same fields were similar but not identical. The two species of birds show preferences on the basis of the size, numbers, and speed of movement of the animals present. Some suggestions are given for possible further lines of research.--From abstr.

Easterla, David A. (Mo. Coop. Wildl. Res. Unit, Columbia.) FOODS OF LE CONTE'S SPARROW. Auk 79(2): 272-273. Apr. 1962. WR 106: 71
Fifteen Le Conte's sparrows were examined during the fall and spring of 1960-61 to identify the contents of the gizzards. Andropogon sp. (Bluestem), Seteria glauca (Yellow Foxtail) and Sorghastrum nutans (Indian Grass) composed 53.7% of the food items present. The percentage of total food ingested that was animal matter was relatively small; plant foods consisted of 82.9% of total.

Kneitz, G. [THE DISTRIBUTION OF WOODPECKER HOLES AND THE ADJUSTMENT OF FLIGHT HOLES.] Waldhygiene 4(3/4): 80-120. 1961. [From Bibliog. Agr. 26(3), 1962.] WR 106: 71
In German.

Niebuhr, Otto, and Karl Greve. VOM BRACHPIEPER (ANTHUS CAMPESTRIS) ZWISCHEN HARZ UND NORDHEIDE. [CONCERNING THE MEADOW PIPIT (ANTHUS CAMPESTRIS) IN HARZ AND NORDHEIDE REGIONS.] Ornithol. Mitteil. 13(6): 101-108. 1961. [From Biol. Abstr. 37(2), 1962.] WR 106: 71
[In German.] The Meadow Pipit inhabits lowlands. During the past 100 years as the climate warmed, the pipits have spread into additional biotopes.--D. E. Davis.

Rowdon, Larry P. (Marine Biol. Lab., Grindstone, Magdalen Islands, Quebec.) YEARLY OCCURRENCE OF COMMON GRACKLES IN DRY LOBSTER POTS. Canadian Field-Naturalist 75(4): 242-244. Oct.-Dec. 1961. WR 106: 71

Skinner, Robert W. (State Conserv. Dept., Montgomery, Ala.) FEEDING HABITS OF THE MISSISSIPPI KITE. Auk 79(2): 273-274. Apr. 1962. WR 106: 71
Twelve hours of a five-day period were spent observing the Mississippi kite. May beetle (Phyllophaga sp.), Carolina locust (Dissosterra carolina carolina), and undetermined grasshoppers and dragonflies were the types of prey species taken. Methods of securing prey and the manner and amount of prey consumed in a given period of time are discussed.

Warham, John. (Dept. External Affairs, 187 Collins St., Melbourne, Australia.) THE BIOLOGY OF THE GIANT PETREL MACRONECTES GIGANTEUS. Auk 79(2): 139-160, 2 figs. Apr. 1962. WR 106: 71
Investigations on Macquarie Island are the basis of discussion of the annual cycle, population and nest sites, display, nesting and incubation, the nestling, breeding success, two-egg clutches, plumage and molt, food and feeding, and oil spitting of the giant petrel.

REPTILES AND AMPHIBIANS

Brattstrom, Bayard H. (Orange County State Coll., Fullerton, Calif.) THERMAL CONTROL OF AGGREGATION BEHAVIOR IN TADPOLES. Herpetologica 18(1): 38-46, 5 figs. 9 Apr. 1962. WR 106: 71
When other stimuli are absent, aggregation behavior in some tadpoles appears to be thermally controlled. Aggregation is apparently the result of individual tadpoles responding to microclimatic thermal gradients. Tadpoles in aggregations absorb more radiant heat and disperse more heat to the surrounding water than do isolated tadpoles. The survival value of temperature-controlled aggregations in tadpoles appears to be related to an increase in body temperature. This results in an increase in metabolism and thus decreases the time needed before metamorphosis.

Bush, Francis M., and Edward F. Menhinick. (Howard Coll., Birmingham, Ala.) THE FOOD OF BUFO WOODHOUSEI FOWLERI HINCKLEY. Herpetologica 18(2): 110-114. 22 June 1962. WR 106: 72

The food of 111 toads is reported. An average of 13 insects per toad with coleoptera comprising the bulk (70-91%) of the food consumed.

Cliburn, J. William. (Univ. Southern Miss., Hattiesburg.) FURTHER NOTES ON THE BEHAVIOR OF A CAPTIVE BLACK PINE SNAKE (PITUOPHIS MELANOLEUCUS LODINGI BLANCHARD). Herpetologica 18(1): 34-37. 9 Apr. 1962. WR 106: 72

Information concerning habitat, ecdysis, possible natural enemies, scutellation, and coloration are included for two specimens. A captive specimen refused the following potential food items: chicken eggs, Bufo sp., Sceloporus undulatus, Ophisaurus sp., Elaphe obsoleta spiloides, Masticophis f. flagellum, Lampropeltis getulus holbrooki, Natrix sipedon pleuralis, N. r. rhombifera, and N. erythrogaster flavigaster. It fed readily on live chicks and a young turkey. This snake probably does not accept cold-blooded prey, at least when well-fed from other sources.--Author.

Eglis, Arsene. (41-72 Denman St., Elmhurst, N. Y.) TORTOISE BEHAVIOR: A TAXONOMIC ADJUNCT. Herpetologica 18(1): 1-8, 1 fig. 9 Apr. 1962. WR 106: 72

The olfactory movements of some predominantly terrestrial turtles and of some tortoises are described and are considered a taxonomic aid.

Karlstrom, Ernest L. THE TOAD GENUS BUFO IN THE SIERRA NEVADA OF CALIFORNIA / ECOLOGICAL AND SYSTEMATIC RELATIONSHIPS. Univ. Calif. Press (Berkeley & Los Angeles) 62(1): 1-104, 21 figs., 5 pls. 1962. $2.25. WR 106: 72

Natural history and systematics of Bufo canorus and B. boreas. Both toads exhibit preference for open montane meadows. Bufo canorus, however, selects shallow snow-melt pools and runoff streams for breeding; boreas utilizes deeper water at the margins of ponds, lakes, or slow-moving streams. Bufo canorus is essentially diurnal in habit, in response to cold temperatures prevailing at night at high elevations; boreas, at high altitudes (to 8,200 feet) in the Sierra, is primarily crespuscular and nocturnal. Adults of both species are active over a wide range of environmental temperatures, approximately 2°-30°C., and show no marked preference for particular thermal levels. Rapid development of the larvae is considered to be an important adaptation in the relatively cold macroclimate of the High Sierra. Data on water temperatures have been obtained for the tadpole period for both species. On the basis of temperature summation, Bufo canorus appears to develop faster than Bufo boreas. Behavioral and morphological features of canorus which might aid in acceleration of larval development include: oviposition in shallow water where the spawn is exposed to higher water temperatures (and direct insolation), large egg size, and extreme melanism of the tadpoles. The larvae of both species appear to prefer the warmer waters available in certain parts of the pools or ponds.--From summ.

Lanyon, Wesley E. (Am. Museum Nat. Hist., New York 24.) SPECIFIC LIMITS AND DISTRIBUTION OF MEADOWLARKS OF THE DESERT GRASSLAND. Auk 79(2): 183-207, 13 figs. Apr. 1962. WR 106: 72

Specific limits for morphological and vocal characters are presented for those populations of the two species of meadowlarks that breed in the desert grasslands of the southwestern United States and the Mexican plateau. The two species can be readily distinguished in the field on the basis of consistent differences in their respective call notes and primary songs, and in the hand by distinctive markings. Habitat preferences are also discussed.--From auth. summ.

Michaud, Ted C. (Carroll Coll., Waukesha, Wis.) CALL DISCRIMINATION BY FEMALES OF THE CHORUS FROGS, PSEUDACRIS CLARKI AND PSEUDACRIS NIGRITA. Copeia 1962(1): 213-215. 11 Apr. 1962. WR 106: 72

Myers, Charles W., and Andrew A. Arata. (Southern Ill. Univ., Carbondale.) REMARKS ON "DEFENSIVE" BEHAVIOR IN THE HOGNOSE SNAKE HETERODON SIMUS (LINNAEUS). Quart. J. Fla. Acad. Sci. 24(2): 108-110. 1961. [From Biol. Abstr. 37(3), 1962.] WR 106: 73

Observations on the frequency and nature of death-feigning by H. simus are provided. Comments dealing with this phenomenon in other members of the genus are included.--A. A. Arata.

Stuart, L. C. (Univ. Mich., Ann Arbor.) HERPETOFAUNA OF THE SOUTHEASTERN HIGHLANDS OF GUATEMALA. Contrib. Lab. Vertebrate Biol. 68: 1-65, illus., maps. 1954. [From Biol. Abstr. 37(5), 1962.] WR 106: 73

The SE highlands of Guatemala consists of three vegetation belts which may be recognized in the region, a lower belt which supports short grasses, desert shrub, and chaparral, an intermediate one of oak and pine, and a high one of temperate broadleaf forest. The region supports a depauperate herpetological assemblage of but 59 known forms. The snake fauna is especially impoverished. The herpetofauna is distributed vertically in rough accordance with the vegetation belts; a lowland element restricted to the desert shrub and chaparral, a highland element in the temperate forest belt, and an element of obscure relationships, either near-endemic or autochthonous to the region, in the oak-pine belt. The local distribution of the herpetofauna suggests that as a whole it has been derived from types characteristic of forested regions of no more than moderate relief.--Author.

Tamsitt, J. R. (Univ. Andes, Bogotá, Colombia.) NOTES ON A POPULATION OF THE MANITOBA TOAD (BUFO HEMIOPHRYS) IN THE DELTA MARSH REGION OF LAKE MANITOBA, CANADA. Ecology 43(1): 147-150, 1 fig. Winter 1962. WR 106: 73

Activity cycles, distribution patterns, beach-frequenting behavior, age composition, and predation are discussed.

Tinkle, Donald W., Don McGregor, and Sumner Dana. (Texas Technol. Coll., Lubbock.) HOME RANGE ECOLOGY OF UTA STANSBURIANA STEJNEGERI. Ecology 43(2): 223-229, 1 fig. Spring 1962. WR 106: 73

A study, conducted during 1960, of movements and of mortality of marked lizards. The home range averages 0.06 acre in adult ♂♂, 0.02 in adult ♀♀, and 0.01 in juveniles; estimates of population density showed 18.4 adults and 50 or more juveniles per acre. Establishment and size of home range, territoriality of ♂♂ during the breeding season, the importance of specific plant species in the ecology of these lizards and possible predators, competitors, and other associates are discussed.--From auth. summ.

Treadwell, Robert W. (Southwest Texas State Coll., San Marcos.) TIME AND SEQUENCE OF APPEARANCE OF CERTAIN GROSS STRUCTURES IN PITUOPHIS MELANOLEUCUS SAYI EMBRYOS. Herpetologica 18(2): 120-124, 2 figs. 22 June 1962. WR 106: 73

Webb, Robert G. NORTH AMERICAN RECENT SOFT-SHELLED TURTLES (FAMILY TRIONYCHIDAE). Museum Nat. Hist., Univ. Kans. Publ. 13(10): 429-611, 24 figs. 16 Feb. 1962. WR 106: 73

The taxonomy, natural history, and evolutionary history of Trionyx ferox, T. spinifer, T. ater, and T. muticus.

Wharton, Charles Heizer. THE ECOLOGY OF THE COTTONMOUTHS, AGKISTRODON PISCIVORUS PISCIVORUS LACÉPÈDE, OF SEA HORSE KEY, FLORIDA. Ph.D. thesis, Univ. Fla. 225 p. 1958. [Long abstr. in Dissertation Abstr. 22(8), 1962.] WR 106: 73

Cottonmouths occur on several of the Cedar Keys in an abundance up to 25 per acre. This density is due to the presence of rookeries of cormorants, egrets, and herons which provide disgorged fish (the bulk of the food of adult snakes).

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